

Exhibit 10

World Health Organization Model List of Essential Medicines

22nd List
(2021)



World Health
Organization

WHO/MHP/HPS/EML/2021.02

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WHO Model List of Essential Medicines – 22nd List (2021)

Explanatory notes

The **core list** presents a list of minimum medicine needs for a basic health-care system, listing the most efficacious, safe and cost-effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment.

Where the **[c]** symbol is placed next to an individual medicine or strength of medicine on the core list it signifies that there is a specific indication for restricting its use to children.

The **complementary list** presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or less attractive cost-effectiveness in a variety of settings.

Where the **[c]** symbol is placed next to an individual medicine or strength of medicine on the complementary list it signifies that the medicine(s) require(s) specialist diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training for their use in children.

The **square box symbol (□)** is intended to indicate therapeutic alternatives to the listed medicine that may be considered for selection in national essential medicines lists. Alternatives may be individual medicines, or multiple medicines within a pharmacological class or chemical subgroup, defined at the 4th level of the [Anatomical Therapeutic Chemical \(ATC\) classification](#), which have similar clinical effectiveness and safety. The listed medicine should be the example of the class or subgroup for which there is the best evidence for effectiveness and safety. In some cases, this may be the first medicine that is licensed for marketing; in other instances, subsequently licensed compounds may be safer or more effective. Where there is no difference in terms of efficacy and safety data, the listed medicine should be the one that is generally available at the lowest price, based on international drug price information sources. Not all square box listings are applicable to medicine selection for children. A square box is not used to indicate alternative generic brands of the same small molecule medicines, nor alternative biosimilars of biological medicines. However, the selection and use of quality-assured generics and biosimilars of essential medicines at country level is recommended.

National lists should not use a similar symbol and should be specific in their final selection, which would depend on local availability and price.

The **a** symbol indicates that there is an age or weight restriction on use of the medicine; details for each medicine can be found in Table 1.1.

The presence of an entry on the Essential Medicines List carries no assurance as to pharmaceutical quality. It is the responsibility of the relevant national or regional drug regulatory authority to ensure that each product is of appropriate pharmaceutical quality (including stability) and that, when relevant, different products are interchangeable.

For recommendations and advice concerning all aspects of the quality assurance of medicines see the WHO website <https://www.who.int/teams/health-product-and-policy-standards/standards-and-specifications/norms-and-standards-for-pharmaceuticals/guidelines/quality-assurance>

Medicines and dosage forms are listed in alphabetical order within each section and the order of listing does not imply preference for one form over another. Standard treatment guidelines should be consulted for information on appropriate dosage forms.

The main terms used for dosage forms in the Essential Medicines List can be found in Table 1.2.

Definitions of many of these terms and pharmaceutical quality requirements applicable to the different categories are published in the current edition of *The International Pharmacopoeia*.
<https://www.who.int/teams/health-product-and-policy-standards/standards-and-specifications/norms-and-standards-for-pharmaceuticals/pharmacopoeia>.

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1. ANAESTHETICS, PREOPERATIVE MEDICINES AND MEDICAL GASES	
1.1 General anaesthetics and oxygen	
1.1.1 Inhalational medicines	
halothane	Inhalation.
isoflurane	Inhalation.
nitrous oxide	Inhalation.
oxygen	Inhalation (medical gas).
1.1.2 Injectable medicines	
ketamine	Injection: 50 mg/mL (as hydrochloride) in 10 mL vial.
<input type="checkbox"/> propofol Therapeutic alternatives: - thiopental	Injection: 10 mg/mL; 20 mg/mL.
1.2 Local anaesthetics	
<input type="checkbox"/> bupivacaine Therapeutic alternatives to be reviewed (2023)	Injection: 0.25%; 0.5% (hydrochloride) in vial. Injection for spinal anaesthesia: 0.5% (hydrochloride) in 4 mL ampoule to be mixed with 7.5% glucose solution.
<input type="checkbox"/> lidocaine Therapeutic alternatives to be reviewed (2023)	Injection: 1%; 2% (hydrochloride) in vial. Injection for spinal anaesthesia: 5% (hydrochloride) in 2 mL ampoule to be mixed with 7.5% glucose solution. Topical forms: 2% to 4% (hydrochloride).
lidocaine + epinephrine (adrenaline)	Dental cartridge: 2% (hydrochloride) + epinephrine 1:80 000. Injection: 1%; 2% (hydrochloride or sulfate) + epinephrine 1:200 000 in vial.
Complementary List	
<i>ephedrine</i>	<i>Injection: 30 mg/mL (hydrochloride) in 1 mL ampoule.</i> <i>(For use in spinal anaesthesia during delivery, to prevent hypotension).</i>
1.3 Preoperative medication and sedation for short-term procedures	
atropine	Injection: 1 mg (sulfate) in 1 mL ampoule.
<input type="checkbox"/> midazolam Therapeutic alternatives to be reviewed (2023)	Injection: 1 mg/mL. Oral liquid: 2 mg/mL [c]. Tablet: 7.5 mg; 15 mg.
morphine	Injection: 10 mg (sulfate or hydrochloride) in 1 mL ampoule.

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1.4 Medical gases	
oxygen*	Inhalation For use in the management of hypoxaemia. *No more than 30% oxygen should be used to initiate resuscitation of neonates less than or equal to 32 weeks of gestation.
2. MEDICINES FOR PAIN AND PALLIATIVE CARE	
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIDs)	
acetylsalicylic acid	Suppository: 50 mg to 150 mg. Tablet: 100 mg to 500 mg.
ibuprofen ^a	Oral liquid: 200 mg/5 mL. Tablet: 200 mg; 400 mg; 600 mg. ^a Not in children less than 3 months.
paracetamol*	Oral liquid: 120 mg/5 mL; 125 mg/5 mL. Suppository: 100 mg. Tablet: 100 mg to 500 mg. *Not recommended for anti-inflammatory use due to lack of proven benefit to that effect.
2.2 Opioid analgesics	
codeine	Tablet: 30 mg (phosphate).
fentanyl*	Transdermal patch: 12 micrograms/hr; 25 micrograms/hr; 50 micrograms/hr; 75 micrograms/hr; 100 micrograms/hr *For the management of cancer pain
<input type="checkbox"/> morphine Therapeutic alternatives: - hydromorphone - oxycodone	Granules (slow release; to mix with water): 20 mg to 200 mg (morphine sulfate). Injection: 10 mg (morphine hydrochloride or morphine sulfate) in 1 mL ampoule. Oral liquid: Tablet (slow release): 10 mg to 200mg (morphine hydrochloride or morphine sulfate). Tablet (immediate release): 10 mg (morphine sulfate).
<i>Complementary list</i>	
methadone*	Tablet: 5 mg; 10 mg (hydrochloride) Oral liquid: 5 mg/5 mL; 10 mg/5 mL (hydrochloride) Concentrate for oral liquid: 5 mg/mL; 10 mg/mL (hydrochloride) *For the management of cancer pain.

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2.3 Medicines for other common symptoms in palliative care	
amitriptyline	Tablet: 10 mg; 25 mg; 75 mg.
cyclizine [c]	Injection: 50 mg/mL. Tablet: 50 mg.
dexamethasone	Injection: 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule. Oral liquid: 2 mg/5 mL. Tablet: 2 mg [c]; 4 mg.
diazepam	Injection: 5 mg/mL. Oral liquid: 2 mg/5 mL. Rectal solution: 2.5 mg; 5 mg; 10 mg. Tablet: 5 mg; 10 mg.
docusate sodium	Capsule: 100 mg. Oral liquid: 50 mg/5 mL.
fluoxetine ^a	Solid oral dosage form: 20 mg (as hydrochloride). ^a > 8 years.
haloperidol	Injection: 5 mg in 1 mL ampoule. Oral liquid: 2 mg/mL. Solid oral dosage form: 0.5 mg; 2mg; 5 mg.
hyoscine butylbromide	Injection: 20 mg/mL.
hyoscine hydrobromide [c]	Injection: 400 micrograms/mL; 600 micrograms/mL. Transdermal patches: 1 mg/72 hours.
lactulose [c]	Oral liquid: 3.1 to 3.7 g/5 mL.
loperamide	Solid oral dosage form: 2 mg.
metoclopramide	Injection: 5 mg/mL (hydrochloride) in 2 mL ampoule. Oral liquid: 5 mg/5 mL. Solid oral form: 10 mg (hydrochloride).
midazolam	Injection: 1 mg/mL; 5 mg/mL. Oral liquid: 2mg/mL [c]. Solid oral dosage form: 7.5 mg; 15 mg.
<input type="checkbox"/> ondansetron ^a Therapeutic alternatives: - dolasetron - granisetron - palonosetron - tropisetron	Injection: 2 mg base/mL in 2 mL ampoule (as hydrochloride). Oral liquid: 4 mg base/5 mL. Solid oral dosage form: Eq 4 mg base; Eq 8 mg base. ^a > 1 month.
senna	Oral liquid: 7.5 mg/5 mL.

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3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS	
dexamethasone	Injection: 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.
epinephrine (adrenaline)	Injection: 1 mg/mL (as hydrochloride or hydrogen tartrate) in 1 mL ampoule.
hydrocortisone	Powder for injection: 100 mg (as sodium succinate) in vial.
<input type="checkbox"/> loratadine* Therapeutic alternatives: - cetirizine - fexofenadine	Oral liquid: 1 mg/mL. Tablet: 10 mg. <i>*There may be a role for sedating antihistamines for limited indications (EMLC).</i>
<input type="checkbox"/> prednisolone Therapeutic alternatives: - prednisone	Oral liquid: 5 mg/mL [c]. Tablet: 5 mg; 25 mg.
4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS	
4.1 Non-specific	
charcoal, activated	Powder.
4.2 Specific	
acetylcysteine	Injection: 200 mg/mL in 10 mL ampoule. Oral liquid: 10% [c]; 20% [c].
atropine	Injection: 1 mg (sulfate) in 1 mL ampoule.
calcium gluconate	Injection: 100 mg/mL in 10 mL ampoule.
methylthioninium chloride (methylene blue)	Injection: 10 mg/mL in 10 mL ampoule.
naloxone	Injection: 400 micrograms (hydrochloride) in 1 mL ampoule.
penicillamine	Solid oral dosage form: 250 mg.
potassium ferric hexacyano-ferrate(II) ·2H ₂ O (Prussian blue)	Powder for oral administration.
sodium nitrite	Injection: 30 mg/mL in 10 mL ampoule.
sodium thiosulfate	Injection: 250 mg/mL in 50 mL ampoule.
Complementary List	
deferoxamine	Powder for injection: 500 mg (mesilate) in vial.
dimercaprol	Injection in oil: 50 mg/mL in 2 mL ampoule.
fomepizole	Injection: 5 mg/mL (sulfate) in 20 mL ampoule or 1 g/mL (base) in 1.5 mL ampoule.
sodium calcium edetate	Injection: 200 mg/mL in 5 mL ampoule.
succimer	Solid oral dosage form: 100 mg.

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5. ANTICONVULSANTS/ANTIEPILEPTICS	
carbamazepine	<p>Oral liquid: 100 mg/5 mL.</p> <p>Tablet (chewable): 100 mg; 200 mg.</p> <p>Tablet (scored): 100 mg; 200 mg.</p>
diazepam	Gel or rectal solution: 5 mg/mL in 0.5 mL; 2 mL; 4 mL tubes.
lamotrigine*	<p>Tablet: 25 mg; 50 mg; 100 mg; 200 mg.</p> <p>Tablet (chewable, dispersible): 2 mg; 5 mg; 25 mg; 50 mg; 100 mg; 200 mg.</p> <p>*For use as adjunctive therapy for treatment-resistant partial or generalized seizures.</p>
<input type="checkbox"/> lorazepam Therapeutic alternatives: - diazepam (injection) - midazolam (injection)	<p>Injection: 2 mg/mL in 1 mL ampoule; 4 mg/mL in 1 mL ampoule.</p>
magnesium sulfate*	<p>Injection: 0.5 g/mL in 2 mL ampoule (equivalent to 1 g in 2 mL; 50% weight/volume); 0.5 g/mL in 10 mL ampoule (equivalent to 5 g in 10 mL; 50% weight/volume).</p> <p>*For use in eclampsia and severe pre-eclampsia and not for other convulsant disorders.</p>
midazolam	<p>Solution for oromucosal administration: 5 mg/mL; 10 mg/mL.</p> <p>Ampoule*: 1 mg/mL; 10 mg/mL.</p> <p>*For buccal administration when solution for oromucosal administration is not available.</p>
phenobarbital	<p>Injection: 200 mg/mL (sodium).</p> <p>Oral liquid: 15 mg/5 mL.</p> <p>Tablet: 15 mg to 100 mg.</p>
phenytoin	<p>Injection: 50 mg/mL (sodium) in 5 mL vial.</p> <p>Oral liquid: 25 mg to 30 mg/5 mL.*</p> <p>Solid oral dosage form: 25 mg; 50 mg; 100 mg (sodium).</p> <p>Tablet (chewable): 50 mg.</p> <p>*The presence of both 25 mg/5 mL and 30 mg/5 mL strengths on the same market would cause confusion in prescribing and dispensing and should be avoided.</p>
valproic acid (sodium valproate)* <i>*Avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.</i>	<p>Oral liquid: 200 mg/5 mL.</p> <p>Tablet (crushable): 100 mg.</p> <p>Tablet (enteric-coated): 200 mg; 500 mg.</p>

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<i>Complementary List</i>	
<i>ethosuximide</i>	<i>Capsule: 250 mg. Oral liquid: 250 mg/5 mL.</i>
<i>valproic acid (sodium valproate)*</i> <i>*Avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.</i>	<i>Injection: 100 mg/mL in 4 mL ampoule; 100 mg/mL in 10 mL ampoule.</i>
6. ANTI-INFECTIVE MEDICINES	
6.1 Anthelmintics	
6.1.1 Intestinal anthelmintics	
albendazole	Tablet (chewable): 400 mg.
ivermectin	Tablet (scored): 3 mg.
levamisole	Tablet: 50 mg; 150 mg (as hydrochloride).
mebendazole	Tablet (chewable): 100 mg; 500 mg.
niclosamide	Tablet (chewable): 500 mg.
praziquantel	Tablet: 150 mg; 600 mg.
pyrantel	Oral liquid: 50 mg/mL (as embonate or pamoate). Tablet (chewable): 250 mg (as embonate or pamoate).
6.1.2 Antifilarials	
albendazole	Tablet (chewable): 400 mg.
diethylcarbamazine	Tablet: 50 mg; 100 mg (dihydrogen citrate).
ivermectin	Tablet (scored): 3 mg.
6.1.3 Antischistosomes and other antitrepatode medicines	
praziquantel	Tablet: 600 mg.
triclabendazole	Tablet: 250 mg.
<i>Complementary List</i>	
<i>oxamniquine*</i>	<i>Capsule: 250 mg. Oral liquid: 250 mg/5 mL. *For use when praziquantel treatment fails.</i>
6.1.4 Cysticidal medicines	
<i>Complementary List</i>	
<i>albendazole</i>	<i>Tablet (chewable): 400 mg.</i>
<i>mebendazole</i>	<i>Tablet (chewable): 500 mg.</i>
<i>praziquantel</i>	<i>Tablet: 500 mg; 600 mg.</i>

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6.2 Antibacterials

To assist in the development of tools for antibiotic stewardship at local, national and global levels and to reduce antimicrobial resistance, the Access, Watch, Reserve (AWaRe) classification of antibiotics was developed – where antibiotics are classified into different groups to emphasize the importance of their appropriate use.

ACCESS GROUP ANTIBIOTICS

This group includes antibiotics that have activity against a wide range of commonly encountered susceptible pathogens while also showing lower resistance potential than antibiotics in the other groups. Selected Access group antibiotics are recommended as essential first or second choice empiric treatment options for infectious syndromes reviewed by the EML Expert Committee and are listed as individual medicines on the Model Lists to improve access and promote appropriate use. They are essential antibiotics that should be widely available, affordable and quality assured.

WATCH GROUP ANTIBIOTICS

This group includes antibiotic classes that have higher resistance potential and includes most of the highest priority agents among the [Critically Important Antimicrobials for Human Medicine](#) and/or antibiotics that are at relatively high risk of selection of bacterial resistance. These medicines should be prioritized as key targets of stewardship programs and monitoring. Selected Watch group antibiotics are recommended as essential first or second choice empiric treatment options for a limited number of specific infectious syndromes and are listed as individual medicines on the Model Lists.

RESERVE GROUP ANTIBIOTICS

This group includes antibiotics and antibiotic classes that should be reserved for treatment of confirmed or suspected infections due to multi-drug-resistant organisms. Reserve group antibiotics should be treated as “last resort” options. Selected Reserve group antibiotics are listed as individual medicines on the Model Lists when they have a favourable risk-benefit profile and proven activity against “Critical Priority” or “High Priority” pathogens identified by the [WHO Priority Pathogens List](#), notably carbapenem resistant *Enterobacteriaceae*. These antibiotics should be accessible, but their use should be tailored to highly specific patients and settings, when all alternatives have failed or are not suitable. These medicines could be protected and prioritized as key targets of national and international stewardship programs involving monitoring and utilization reporting, to preserve their effectiveness.

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6.2.1 Access group antibiotics		
amikacin	Injection: 250 mg/mL (as sulfate) in 2 mL vial.	
	FIRST CHOICE – <i>High-risk febrile neutropenia</i> – <i>Pyelonephritis or prostatitis (severe)</i>	SECOND CHOICE – <i>Sepsis in neonates and children [c]</i>
amoxicillin	Powder for injection: 250 mg; 500 mg; 1 g (as sodium) in vial. Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL (as trihydrate) [c]. Solid oral dosage form: 250 mg; 500 mg; 1 g (as trihydrate).	
	FIRST CHOICE – <i>Community acquired pneumonia (mild to moderate)</i> – <i>Community acquired pneumonia (severe) [c]</i> – <i>Complicated severe acute malnutrition [c]</i> – <i>Exacerbations of COPD</i> – <i>Otitis media</i> – <i>Pharyngitis</i> – <i>Progressive apical dental abscess</i> – <i>Sepsis in neonates and children [c]</i> – <i>Sinusitis</i> – <i>Uncomplicated severe acute malnutrition [c]</i>	SECOND CHOICE – <i>Acute bacterial meningitis</i>
amoxicillin + clavulanic acid	Powder for injection: 500 mg (as sodium) + 100 mg (as potassium salt); 1000 mg (as sodium) + 200 mg (as potassium salt) in vial. Powder for oral liquid: 125 mg (as trihydrate) + 31.25 mg (as potassium salt)/5 mL; 250 mg (as trihydrate) + 62.5 mg (as potassium salt)/5mL [c]. Tablet: 500 mg (as trihydrate) + 125 mg (as potassium salt); 875 mg (as trihydrate) + 125 mg (as potassium salt).	
	FIRST CHOICE – <i>Community acquired pneumonia (severe) [c]</i> – <i>Complicated intraabdominal infections (mild to moderate)</i> – <i>Exacerbations of COPD</i> – <i>Hospital acquired pneumonia</i> – <i>Low-risk febrile neutropenia</i> – <i>Lower urinary tract infections</i> – <i>Sinusitis</i> – <i>Skin and soft tissue infections</i>	SECOND CHOICE – <i>Bone and joint infections</i> – <i>Community-acquired pneumonia (mild to moderate)</i> – <i>Community acquired pneumonia (severe)</i> – <i>Otitis media</i> – <i>Surgical prophylaxis</i>

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ampicillin	Powder for injection: 500 mg; 1 g (as sodium) in vial.	
	FIRST CHOICE – <i>Community acquired pneumonia (severe)</i> [c] – <i>Complicated intraabdominal infections</i> [c] – <i>Complicated severe acute malnutrition</i> [c] – <i>Sepsis in neonates and children</i> [c]	SECOND CHOICE – <i>Acute bacterial meningitis</i>
benzathine benzylpenicillin	Powder for injection: 1.2 million IU (\approx 900 mg) in vial [c]; 2.4 million IU (\approx 1.8 g) in vial.	
	FIRST CHOICE – <i>Syphilis</i>	SECOND CHOICE
benzylpenicillin	Powder for injection: 600 mg (= 1 million IU); 3 g (= 5 million IU) (sodium or potassium salt) in vial.	
	FIRST CHOICE – <i>Community acquired pneumonia (severe)</i> [c] – <i>Complicated severe acute malnutrition</i> [c] – <i>Sepsis in neonates and children</i> [c] – <i>Syphilis</i>	SECOND CHOICE – <i>Acute bacterial meningitis</i> [c]
cefalexin	Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL (anhydrous). Solid oral dosage form: 250 mg; 500 mg (as monohydrate).	
	FIRST CHOICE – <i>Skin and soft tissue infections</i>	SECOND CHOICE – <i>Exacerbations of COPD</i> – <i>Pharyngitis</i>
cefazolin ^a	Powder for injection: 1 g (as sodium salt) in vial. ^a > 1 month.	
	FIRST CHOICE – <i>Surgical prophylaxis</i>	SECOND CHOICE – <i>Bone and joint infections</i>
chloramphenicol	Capsule: 250 mg. Oily suspension for injection*: 0.5 g/mL (as sodium succinate) in 2 mL ampoule. *Only for the presumptive treatment of epidemic meningitis in children older than 2 years and in adults. Oral liquid: 150 mg/5 mL (as palmitate). Powder for injection: 1 g (sodium succinate) in vial.	
	FIRST CHOICE	SECOND CHOICE – <i>Acute bacterial meningitis</i>

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clindamycin	<p>Capsule: 150 mg (as hydrochloride).</p> <p>Injection: 150 mg/mL (as phosphate); 600 mg/4 mL (as phosphate); 900 mg/6 mL (as phosphate).</p> <p>Oral liquid: 75 mg/5 mL (as palmitate) [c].</p> <table border="1"> <tr> <th data-bbox="470 342 965 380">FIRST CHOICE</th><th data-bbox="965 342 1520 380">SECOND CHOICE</th></tr> <tr> <td data-bbox="470 380 965 448">– Necrotizing fasciitis</td><td data-bbox="965 380 1520 448">– Bone and joint infections</td></tr> </table>	FIRST CHOICE	SECOND CHOICE	– Necrotizing fasciitis	– Bone and joint infections
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– Necrotizing fasciitis	– Bone and joint infections				
<p>□ cloxacillin*</p> <p>Therapeutic alternatives:</p> <p>– 4th level ATC chemical subgroup (J01CF Beta-lactamase resistant penicillins)</p>	<p>Capsule: 500 mg; 1 g (as sodium).</p> <p>Powder for injection: 500 mg (as sodium) in vial.</p> <p>Powder for oral liquid: 125 mg/5 mL (as sodium).</p> <p>*cloxacillin, dicloxacillin and flucloxacillin are preferred for oral administration due to better bioavailability.</p> <table border="1"> <tr> <th data-bbox="470 689 965 728">FIRST CHOICE</th><th data-bbox="965 689 1520 728">SECOND CHOICE</th></tr> <tr> <td data-bbox="470 728 965 840"> – Bone and joint infections – Skin and soft tissue infections </td><td data-bbox="965 728 1520 840">– Sepsis in neonates and children [c]</td></tr> </table>	FIRST CHOICE	SECOND CHOICE	– Bone and joint infections – Skin and soft tissue infections	– Sepsis in neonates and children [c]
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– Bone and joint infections – Skin and soft tissue infections	– Sepsis in neonates and children [c]				
doxycycline ^a	<p>Oral liquid: 25 mg/5 mL [c]; 50 mg/5 mL (anhydrous) [c].</p> <p>Powder for injection: 100 mg in vial.</p> <p>Solid oral dosage form: 50 mg [c]; 100 mg (as hyclate).</p> <p>^a Use in children <8 years only for life-threatening infections when no alternative exists.</p> <table border="1"> <tr> <th data-bbox="470 1041 965 1079">FIRST CHOICE</th><th data-bbox="965 1041 1520 1079">SECOND CHOICE</th></tr> <tr> <td data-bbox="470 1079 965 1249"> – Cholera – Sexually transmitted infection due to <i>Chlamydia trachomatis</i> </td><td data-bbox="965 1079 1520 1249"> – Cholera [c] – Community acquired pneumonia (mild to moderate) – Exacerbations of COPD </td></tr> </table>	FIRST CHOICE	SECOND CHOICE	– Cholera – Sexually transmitted infection due to <i>Chlamydia trachomatis</i>	– Cholera [c] – Community acquired pneumonia (mild to moderate) – Exacerbations of COPD
FIRST CHOICE	SECOND CHOICE				
– Cholera – Sexually transmitted infection due to <i>Chlamydia trachomatis</i>	– Cholera [c] – Community acquired pneumonia (mild to moderate) – Exacerbations of COPD				
gentamicin	<p>Injection: 10 mg/mL (as sulfate); 40 mg/mL (as sulfate) in 2 mL vial.</p> <table border="1"> <tr> <th data-bbox="470 1310 965 1348">FIRST CHOICE</th><th data-bbox="965 1310 1520 1348">SECOND CHOICE</th></tr> <tr> <td data-bbox="470 1348 965 1686"> – Acute bacterial meningitis in neonates [c] – Community acquired pneumonia (severe) [c] – Complicated intraabdominal infections [c] – Complicated severe acute malnutrition [c] – Sepsis in neonates and children [c] </td><td data-bbox="965 1348 1520 1686"> – Gonorrhoea – Surgical prophylaxis </td></tr> </table>	FIRST CHOICE	SECOND CHOICE	– Acute bacterial meningitis in neonates [c] – Community acquired pneumonia (severe) [c] – Complicated intraabdominal infections [c] – Complicated severe acute malnutrition [c] – Sepsis in neonates and children [c]	– Gonorrhoea – Surgical prophylaxis
FIRST CHOICE	SECOND CHOICE				
– Acute bacterial meningitis in neonates [c] – Community acquired pneumonia (severe) [c] – Complicated intraabdominal infections [c] – Complicated severe acute malnutrition [c] – Sepsis in neonates and children [c]	– Gonorrhoea – Surgical prophylaxis				

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metronidazole	Injection: 500 mg in 100 mL vial. Oral liquid: 200 mg/5 mL (as benzoate). Suppository: 500 mg; 1 g. Tablet: 200 mg to 500 mg.	
	FIRST CHOICE – <i>C. difficile infection</i> – <i>Complicated intraabdominal infections (mild to moderate)</i> – <i>Complicated intrabdominal infections (severe)</i> – <i>Necrotizing fasciitis</i> – <i>Surgical prophylaxis</i> – <i>Trichomoniasis</i>	SECOND CHOICE – <i>Complicated intraabdominal infections (mild to moderate)</i>
nitrofurantoin	Oral liquid: 25 mg/5 mL [c]. Tablet: 100 mg.	
	FIRST CHOICE – <i>Lower urinary tract infections</i>	SECOND CHOICE
phenoxymethylpenicillin	Powder for oral liquid: 250 mg/5 mL (as potassium). Tablet: 250 mg; 500 mg (as potassium).	
	FIRST CHOICE – <i>Community acquired pneumonia (mild to moderate)</i> – <i>Pharyngitis</i> – <i>Progressive apical dental abscess</i>	SECOND CHOICE
procaine benzylpenicillin*	Powder for injection: 1 g (=1 million IU); 3 g (=3 million IU) in vial. <i>*Procaine benzylpenicillin is not recommended as first-line treatment for neonatal sepsis except in settings with high neonatal mortality, when given by trained health workers in cases where hospital care is not achievable.</i>	
	FIRST CHOICE – <i>Syphilis (congenital) [c]</i>	SECOND CHOICE – <i>Syphilis</i>
spectinomycin	Powder for injection: 2 g (as hydrochloride) in vial.	
	FIRST CHOICE	SECOND CHOICE – <i>Gonorrhoea</i>
sulfamethoxazole + trimethoprim	Injection: 80 mg + 16 mg/mL in 5 mL ampoule; 80 mg + 16 mg/mL in 10 mL ampoule. Oral liquid: 200 mg + 40 mg/5 mL. Tablet: 100 mg + 20 mg; 400 mg + 80 mg; 800 mg + 160 mg.	
	FIRST CHOICE – <i>Lower urinary tract infections</i>	SECOND CHOICE – <i>Acute invasive diarrhoea / bacterial dysentery</i>

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trimethoprim	Tablet: 100 mg; 200 mg. Oral liquid: 50 mg/5 mL [c].	
	FIRST CHOICE <i>– Lower urinary tract infections</i>	SECOND CHOICE
6.2.2 Watch group antibiotics		
azithromycin	Capsule: 250 mg; 500 mg (anhydrous). Oral liquid: 200 mg/5 mL.	
	FIRST CHOICE <i>– Cholera [c]</i> <i>– Enteric fever</i> <i>– Gonorrhoea</i> <i>– Sexually transmitted infection due to Chlamydia trachomatis</i> <i>– Trachoma</i> <i>– Yaws</i>	SECOND CHOICE <i>– Acute invasive bacterial diarrhoea / dysentery</i> <i>– Gonorrhoea</i>
cefixime	Powder for oral liquid: 100 mg/5 mL [c]. Solid oral dosage form: 200 mg; 400 mg (as trihydrate).	
	FIRST CHOICE	SECOND CHOICE <i>– Acute invasive bacterial diarrhoea / dysentery</i> <i>– Gonorrhoea</i>
cefotaxime*	Powder for injection: 250 mg (as sodium) in vial. *3rd generation cephalosporin of choice for use in hospitalized neonates.	
	FIRST CHOICE <i>– Acute bacterial meningitis</i> <i>– Community acquired pneumonia (severe)</i> <i>– Complicated intraabdominal infections (mild to moderate)</i> <i>– Complicated intraabdominal infections (severe)</i> <i>– Hospital acquired pneumonia</i> <i>– Pyelonephritis or prostatitis (severe)</i>	SECOND CHOICE <i>– Bone and joint infections</i> <i>– Pyelonephritis or prostatitis (mild to moderate)</i> <i>– Sepsis in neonates and children [c]</i>

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ceftriaxone* ^a	Powder for injection: 250 mg; 1 g; 2 g (as sodium) in vial. *Do not administer with calcium and avoid in infants with hyperbilirubinaemia. ^a > 41 weeks corrected gestational age.	
	FIRST CHOICE – <i>Acute bacterial meningitis</i> – <i>Community acquired pneumonia (severe)</i> – <i>Complicated intraabdominal infections (mild to moderate)</i> – <i>Complicated intrabdominal infections (severe)</i> – <i>Endophthalmitis</i> – <i>Enteric fever</i> – <i>Gonorrhoea</i> – <i>Hospital acquired pneumonia</i> – <i>Necrotizing fasciitis</i> – <i>Pyelonephritis or prostatitis (severe)</i>	SECOND CHOICE – <i>Acute invasive bacterial diarrhoea / dysentery</i> – <i>Bone and joint infections</i> – <i>Pyelonephritis or prostatitis (mild to moderate)</i> – <i>Sepsis in neonates and children</i> [c]
cefuroxime	Powder for injection: 250 mg; 750 mg; 1.5 g (as sodium) in vial.	
	FIRST CHOICE	SECOND CHOICE – <i>Surgical prophylaxis</i>
ciprofloxacin	Oral liquid: 250 mg/5 mL (anhydrous) [c]. Solution for IV infusion: 2 mg/mL (as hyclate) [c]. Solid oral dosage form: 250 mg; 500 mg (as hydrochloride).	
	FIRST CHOICE – <i>Acute invasive bacterial diarrhoea / dysentery</i> – <i>Enteric fever</i> – <i>Low-risk febrile neutropenia</i> – <i>Pyelonephritis or prostatitis (mild to moderate)</i>	SECOND CHOICE – <i>Cholera</i> – <i>Complicated intraabdominal infections (mild to moderate)</i>
<div><input type="checkbox"/> clarithromycin†</div> <div>Therapeutic alternatives:</div> <div>- erythromycin*</div> <div> *as second choice treatment for pharyngitis in children (EMLc only)</div>	Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL. Powder for injection: 500 mg in vial. Solid oral dosage form: 500 mg. †clarithromycin is also listed for use in combination regimens for eradication of <i>H. pylori</i> in adults.	
	FIRST CHOICE <i>Community acquired pneumonia (severe)</i>	SECOND CHOICE – <i>Pharyngitis</i>

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piperacillin + tazobactam	Powder for injection: 2 g (as sodium) + 250 mg (as sodium); 4 g (as sodium) + 500 mg (as sodium) in vial.	
	FIRST CHOICE – <i>Complicated intraabdominal infections (severe)</i> – <i>High-risk febrile neutropenia</i> – <i>Hospital acquired pneumonia</i> – <i>Necrotizing fasciitis</i>	SECOND CHOICE
vancomycin	Capsule: 125 mg; 250 mg (as hydrochloride).	
	FIRST CHOICE	SECOND CHOICE – <i>C. difficile infection</i>
Complementary List		
ceftazidime	Powder for injection: 250 mg; 1 g (as pentahydrate) in vial.	
	FIRST CHOICE – <i>Endophthalmitis</i>	SECOND CHOICE
<input type="checkbox"/> meropenem* ^a <i>Therapeutic alternatives*:</i> – imipenem + cilastatin <i>*complicated intraabdominal infections and high-risk febrile neutropenia only. Meropenem is the preferred choice for acute bacterial meningitis in neonates.</i>	Powder for injection: 500 mg (as trihydrate); 1 g (as trihydrate) in vial. ^a > 3 months.	
	FIRST CHOICE	SECOND CHOICE – <i>Acute bacterial meningitis in neonates [c]</i> – <i>Complicated intraabdominal infections (severe)</i> – <i>High-risk febrile neutropenia</i>
vancomycin	Powder for injection: 250 mg; 500 mg; 1 g (as hydrochloride) in vial.	
	FIRST CHOICE – <i>Endophthalmitis</i> – <i>Necrotizing fasciitis</i>	SECOND CHOICE – <i>High-risk febrile neutropenia</i>
6.2.3 Reserve group antibiotics		
Complementary List		
cefiderocol	Powder for injection: 1 g (as sulfate toxylate) in vial.	
ceftazidime + avibactam	Powder for injection: 2 g + 0.5 g in vial.	
colistin	Powder for injection: 1 million IU (as colisthemethate sodium) in vial.	
fosfomycin	Powder for injection: 2 g; 4 g (as sodium) in vial.	
linezolid	Injection for intravenous administration: 2 mg/mL in 300 mL bag. Powder for oral liquid: 100 mg/5 mL. Tablet: 400 mg; 600 mg.	
meropenem + vaborbactam	Powder for injection: 1 g (as trihydrate) + 1 g in vial.	
plazomicin	Injection: 500 mg/10 mL.	
polymyxin B	Powder for injection: 500,000 IU in vial.	

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6.2.4 Antileprosy medicines

Medicines used in the treatment of leprosy should never be used except in combination. Combination therapy is essential to prevent the emergence of drug resistance. Colour-coded blister packs (MDT blister packs) containing standard two-medicine (paucibacillary leprosy) or three-medicine (multibacillary leprosy) combinations for adult and childhood leprosy should be used. MDT blister packs can be supplied free of charge through WHO.

clofazimine	Capsule: 50 mg; 100 mg.
dapsone	Tablet: 25 mg; 50 mg; 100 mg.
rifampicin	Solid oral dosage form: 150 mg; 300 mg.

6.2.5 Antituberculosis medicines

WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality.

ethambutol	Oral liquid: 25 mg/mL [c]. Tablet: 100 mg; 400 mg (hydrochloride). Tablet (dispersible): 100 mg [c]
ethambutol + isoniazid + pyrazinamide + rifampicin	Tablet: 275 mg + 75 mg + 400 mg + 150 mg.
ethambutol + isoniazid + rifampicin	Tablet: 275 mg + 75 mg + 150 mg.
isoniazid	Oral liquid: 50 mg/5 mL [c]. Tablet: 100 mg; 300 mg. Tablet (dispersible): 100 mg [c].
isoniazid + pyrazinamide + rifampicin	Tablet (dispersible): 50 mg + 150 mg + 75 mg [c].
isoniazid + rifampicin	Tablet: 75 mg + 150 mg; 150 mg + 300 mg. Tablet (dispersible): 50 mg + 75 mg [c].
isoniazid + rifapentine	Tablet (scored): 300 mg + 300 mg.
moxifloxacin	Tablet: 400 mg.
pyrazinamide	Oral liquid: 30 mg/mL [c]. Tablet: 400 mg; 500 mg Tablet (dispersible): 150 mg.
rifabutin	Solid oral dosage form: 150 mg.* *For use only in patients with HIV receiving protease inhibitors.
rifampicin	Oral liquid: 20 mg/mL [c]. Solid oral dosage form: 150 mg; 300 mg.
rifapentine	Tablet: 150 mg; 300 mg.

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Complementary List	
<i>Medicines for the treatment of multidrug-resistant tuberculosis (MDR-TB) should be used in specialized centres adhering to WHO standards for TB control.</i>	
amikacin	Injection: 100 mg/2 mL (as sulfate) in 2 mL vial; 250 mg/mL (as sulfate) in 2 mL vial.
amoxicillin + clavulanic acid*	Powder for oral liquid: 250 mg (as trihydrate) + 62.5 mg (as potassium salt)/5mL [c]. Tablet: 500 mg (as trihydrate) + 125 mg (as potassium salt). *For use only in combination with meropenem or imipenem+cilastatin.
bedaquiline ^a	Tablet: 20 mg [c]; 100 mg. ^a ≥ 5 years
clofazimine	Solid oral dosage form: 50 mg; 100 mg.
<input type="checkbox"/> cycloserine Therapeutic alternatives: - terizidone	Solid oral dosage form: 125 mg [c]; 250 mg.
delamanid ^a	Tablet (dispersible): 25 mg [c]. ^a ≥ 3 years Tablet: 50 mg. ^a ≥ 6 years
<input type="checkbox"/> ethionamide Therapeutic alternatives: - protionamide	Tablet: 125 mg; 250 mg. Tablet (dispersible): 125 mg [c].
levofloxacin	Tablet: 250mg; 500 mg; 750 mg. Tablet (dispersible): 100 mg [c].
linezolid	Powder for oral liquid: 100 mg/5 mL. Tablet: 600 mg. Tablet (dispersible): 150 mg [c].
<input type="checkbox"/> meropenem Therapeutic alternatives: - imipenem + cilastatin	Powder for injection: 500 mg (as trihydrate); 1 g (as trihydrate) in vial.
moxifloxacin	Tablet: 400 mg. Tablet (dispersible): 100 mg [c].
p-aminosalicylic acid	Granules: 4 g in sachet.
streptomycin [c]	Powder for injection: 1 g (as sulfate) in vial.

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6.3 Antifungal medicines	
amphotericin B	Powder for injection: 50 mg (as sodium deoxycholate or liposomal complex) in vial.
clotrimazole	Vaginal cream: 1%; 10%. Vaginal tablet: 100 mg; 500 mg.
fluconazole	Capsule: 50 mg. Injection: 2 mg/mL in vial. Oral liquid: 50 mg/5 mL.
flucytosine	Capsule: 250 mg. Infusion: 2.5 g in 250 mL.
griseofulvin	Oral liquid: 125 mg/5 mL [c]. Solid oral dosage form: 125 mg; 250 mg.
itraconazole*	Capsule: 100 mg. Oral liquid: 10 mg/mL. *For treatment of chronic pulmonary aspergillosis, histoplasmosis, sporotrichosis, paracoccidioidomycosis, mycoses caused by <i>T. marneffe</i> and chromoblastomycosis; and prophylaxis of histoplasmosis and infections caused by <i>T. marneffe</i> in AIDS patients.
nystatin	Lozenge: 100 000 IU. Oral liquid: 50 mg/5 mL [c]; 100 000 IU/mL [c]. Pessary: 100 000 IU. Tablet: 100 000 IU; 500 000 IU.
voriconazole*	Tablet: 50 mg; 200 mg Powder for injection: 200 mg in vial Powder for oral liquid: 40 mg/mL *For treatment of chronic pulmonary aspergillosis and acute invasive aspergillosis.
Complementary List	
<input type="checkbox"/> micafungin <i>Therapeutic alternatives:</i> - anidulafungin - caspofungin	Powder for injection: 50 mg (as sodium); 100 mg (as sodium) in vial.
potassium iodide	Saturated solution.

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6.4 Antiviral medicines	
6.4.1 Antiherpes medicines	
<input type="checkbox"/> aciclovir Therapeutic alternatives: - valaciclovir (oral)	Oral liquid: 200 mg/5 mL [c]. Powder for injection: 250 mg (as sodium salt) in vial. Tablet: 200 mg.
6.4.2 Antiretrovirals	
<p>Based on current evidence and experience of use, medicines in the following classes of antiretrovirals are included as essential medicines for treatment and prevention of HIV (prevention of mother-to-child transmission, pre-exposure prophylaxis (where indicated) and post-exposure prophylaxis). WHO emphasizes the importance of using these products in accordance with global and national guidelines. WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality.</p> <p>Scored tablets can be used in children and therefore can be considered for inclusion in the listing of tablets, provided that adequate quality products are available.</p>	
6.4.2.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
abacavir	Tablet: 300 mg (as sulfate).
lamivudine	Oral liquid: 50 mg/5 mL [c]. Tablet: 150 mg.
tenofovir disoproxil fumarate†	Tablet: 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil). †also indicated for pre-exposure prophylaxis.
zidovudine	Capsule: 250 mg. Oral liquid: 50 mg/5 mL. Solution for IV infusion: 10 mg/mL in 20 mL vial. Tablet: 300 mg.
6.4.2.2 Non-nucleoside reverse transcriptase inhibitors	
efavirenz	Tablet: 600 mg.
nevirapine ^a	Oral liquid: 50 mg/5 mL. Tablet: 50 mg (dispersible); 200 mg. ^a > 6 weeks
6.4.2.3 Protease inhibitors	
<p>Selection of protease inhibitor(s) from the Model List will need to be determined by each country after consideration of international and national treatment guidelines and experience. Ritonavir is recommended for use in combination as a pharmacological booster, and not as an antiretroviral in its own right. All other protease inhibitors should be used in boosted forms (e.g. with ritonavir).</p>	
atazanavir + ritonavir	Tablet (heat stable): 300 mg (as sulfate) + 100 mg.
darunavir ^a	Tablet: 75 mg; 400 mg; 600 mg; 800 mg ^a > 3 years
lopinavir + ritonavir	Solid oral dosage form: 40 mg + 10 mg [c]. Tablet (heat stable): 100 mg + 25 mg; 200 mg + 50 mg.
ritonavir	Tablet (heat stable): 25 mg; 100 mg.

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6.4.2.4 Integrase inhibitors	
dolutegravir ^a	<p>Tablet (dispersible, scored): 10 mg [c].</p> <p>^a ≥ 4 weeks and ≥ 3 kg</p> <p>Tablet: 50 mg</p> <p>^a ≥ 25 kg</p>
raltegravir*	<p>Granules for oral suspension: 100 mg in sachet.</p> <p>Tablet (chewable): 25 mg.</p> <p>Tablet: 400 mg.</p> <p>*For use in pregnant women and in second-line regimens in accordance with WHO treatment guidelines.</p>
6.4.2.5 Fixed-dose combinations of antiretroviral medicines	
abacavir + lamivudine	Tablet (dispersible, scored): 120 mg (as sulfate) + 60 mg.
dolutegravir + lamivudine + tenofovir	Tablet: 50 mg + 300 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil)
efavirenz + [□] emtricitabine + tenofovir Therapeutic alternatives: - lamivudine (for emtricitabine)	Tablet: 600 mg + 200 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
efavirenz + lamivudine + tenofovir	Tablet: 400 mg + 300 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil)
[□] emtricitabine + tenofovir [†] Therapeutic alternatives: - lamivudine (for emtricitabine)	<p>Tablet: 200 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).</p> <p>[†] combination also indicated for pre-exposure prophylaxis</p>
lamivudine + zidovudine	Tablet: 30 mg + 60 mg [c]; 150 mg + 300 mg.
6.4.2.6 Medicines for prevention of HIV-related opportunistic infections	
isoniazid + pyridoxine + sulfamethoxazole + trimethoprim	Tablet (scored): 300 mg + 25 mg + 800 mg + 160 mg
6.4.3 Other antivirals	
ribavirin*	<p>Injection for intravenous administration: 800 mg and 1 g in 10 mL phosphate buffer solution.</p> <p>Solid oral dosage form: 200 mg; 400 mg; 600 mg.</p> <p>*For the treatment of viral haemorrhagic fevers</p>
valganciclovir*	<p>Tablet: 450 mg.</p> <p>*For the treatment of cytomegalovirus retinitis (CMVr).</p>

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<i>Complementary list</i>	
oseltamivir*	Capsule: 30 mg; 45 mg; 75 mg (as phosphate). *Severe illness due to confirmed or suspected influenza virus infection in critically ill hospitalized patients
valganciclovir*[c]	Powder for oral solution: 50 mg/mL Tablet: 450 mg. *For the treatment of cytomegalovirus retinitis (CMVr).
6.4.4 Antihepatitis medicines	
6.4.4.1 Medicines for hepatitis B	
6.4.4.1.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
entecavir	Oral liquid: 0.05 mg/mL Tablet: 0.5 mg; 1 mg
tenofovir disoproxil fumarate	Tablet: 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
6.4.4.2 Medicines for hepatitis C	
Pangenotypic direct-acting antivirals should be considered as therapeutic alternatives for the purposes of selection and procurement at national level.	
6.4.4.2.1 <input type="checkbox"/> Pangenotypic direct-acting antiviral combinations	
daclatasvir*	Tablet: 30 mg; 60 mg (as hydrochloride). *Pangenotypic when used in combination with sofosbuvir
daclatasvir + sofosbuvir	Tablet: 60 mg + 400 mg.
glecaprevir + pibrentasvir	Tablet: 100 mg + 40 mg. Granules: 50 mg + 20 mg in sachet [c].
sofosbuvir*	Tablet: 200 mg; 400 mg. *Pangenotypic when used in combination with daclatasvir
sofosbuvir + velpatasvir	Tablet: 200 mg + 50 mg [c]; 400 mg + 100 mg.
6.4.4.2.2 Non-pangenotypic direct-acting antiviral combinations	
dasabuvir	Tablet: 250 mg.
ledipasvir + sofosbuvir	Tablet: 90 mg + 400 mg.
ombitasvir + paritaprevir + ritonavir	Tablet: 12.5 mg + 75 mg + 50 mg.

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6.4.4.2.3 Other antivirals for hepatitis C	
ribavirin*	<p>Injection for intravenous administration: 800 mg and 1 g in 10 mL phosphate buffer solution.</p> <p>Solid oral dosage form: 200 mg; 400 mg; 600 mg.</p> <p>*For the treatment of hepatitis C, in combination with direct acting anti-viral medicines</p>
Complementary list	
pegylated interferon alfa (2a or 2b) *	<p>Vial or pre-filled syringe:</p> <p>180 micrograms (peginterferon alfa-2a).</p> <p>80 micrograms, 100 micrograms (peginterferon alfa-2b).</p> <p>*To be used in combination with ribavirin.</p>
6.5 Antiprotozoal medicines	
6.5.1 Antiamoebic and anti giardiasis medicines	
diloxanide ^a	<p>Tablet: 500 mg (furoate).</p> <p>^a > 25 kg.</p>
<input type="checkbox"/> metronidazole Therapeutic alternatives: - tinidazole	<p>Injection: 500 mg in 100 mL vial.</p> <p>Oral liquid: 200 mg/5 mL (as benzoate).</p> <p>Tablet: 200 mg to 500 mg.</p>
6.5.2 Antileishmaniasis medicines	
amphotericin B	Powder for injection: 50 mg in vial (as sodium deoxycholate or liposomal complex).
miltefosine	Solid oral dosage form: 10 mg; 50 mg.
paromomycin	Solution for intramuscular injection: 750 mg of paromomycin base (as sulfate).
sodium stibogluconate or meglumine antimoniate	Injection: 100 mg/mL, 1 vial = 30 mL or 30%, equivalent to approximately 8.1% antimony (pentavalent) in 5 mL ampoule.
6.5.3 Antimalarial medicines	
6.5.3.1 For curative treatment	
Medicines for the treatment of <i>P. falciparum</i> malaria cases should be used in combination. The list currently recommends combinations according to treatment guidelines. WHO recognizes that not all of the fixed dose combinations (FDCs) in the WHO treatment guidelines exist, and encourages their development and rigorous testing. WHO also encourages development and testing of rectal dosage formulations.	
amodiaquine*	<p>Tablet: 153 mg or 200 mg (as hydrochloride).</p> <p>*To be used in combination with artesunate 50 mg.</p>
artemether*	<p>Oily injection: 80 mg/mL in 1 mL ampoule.</p> <p>*For use in the management of severe malaria.</p>
artemether + lumefantrine*	<p>Tablet: 20 mg + 120 mg.</p> <p>Tablet (dispersible): 20 mg + 120 mg [c].</p> <p>*Not recommended in the first trimester of pregnancy or in children below 5 kg.</p>

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artesunate*	<p>Injection: ampoules, containing 60 mg anhydrous artesunic acid with a separate ampoule of 5% sodium bicarbonate solution. For use in the management of severe malaria.</p> <p>Rectal dosage form: 50 mg [c]; 100 mg [c]; 200 mg capsules (for pre-referral treatment of severe malaria only; patients should be taken to an appropriate health facility for follow-up care) [c].</p> <p>Tablet: 50 mg.</p> <p>*To be used in combination with either amodiaquine, mefloquine or sulfadoxine + pyrimethamine.</p>
artesunate + amodiaquine*	<p>Tablet: 25 mg + 67.5 mg; 50 mg + 135 mg; 100 mg + 270 mg.</p> <p>*Other combinations that deliver the target doses required such as 153 mg or 200 mg (as hydrochloride) with 50 mg artesunate can be alternatives.</p>
artesunate + mefloquine	Tablet: 25 mg + 55 mg; 100 mg + 220 mg.
artesunate + pyronaridine tetraphosphate ^a	<p>Granules: 20 mg + 60 mg [c].</p> <p>Tablet: 60 mg + 180 mg.</p> <p>^a > 5 kg</p>
chloroquine*	<p>Oral liquid: 50 mg/5 mL (as phosphate or sulfate).</p> <p>Tablet: 100 mg; 150 mg (as phosphate or sulfate).</p> <p>*For use only for the treatment of <i>Plasmodium vivax</i> infection.</p>
dihydroartemisinin + piperaquine phosphate ^a	<p>Tablet: 20 mg + 160 mg; 40 mg + 320 mg.</p> <p>^a > 5 kg</p>
doxycycline*	<p>Capsule: 100 mg (as hydrochloride or hyclate).</p> <p>Tablet (dispersible): 100 mg (as monohydrate).</p> <p>*For use only in combination with quinine.</p>
mefloquine*	<p>Tablet: 250 mg (as hydrochloride).</p> <p>*To be used in combination with artesunate 50 mg.</p>
primaquine*	<p>Tablet: 7.5 mg; 15 mg (as diphosphate).</p> <p>*Only for use to achieve radical cure of <i>Plasmodium vivax</i> and <i>Plasmodium ovale</i> infections, given for 14 days.</p>
quinine*	<p>Injection: 300 mg/mL (hydrochloride) in 2 mL ampoule.</p> <p>Tablet: 300 mg (sulfate) or 300 mg (bisulfate).</p> <p>*For use only in the management of severe malaria and should be used in combination with doxycycline.</p>
sulfadoxine + pyrimethamine*	<p>Tablet: 500 mg + 25 mg.</p> <p>*Only in combination with artesunate 50 mg.</p>

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6.5.3.2 For chemoprevention	
amodiaquine – sulfadoxine + pyrimethamine [c]	Co-packaged dispersible tablets: amodiaquine 76.5 mg (as hydrochloride) [3] and sulfadoxine + pyrimethamine 250 mg + 12.5 mg [1]; amodiaquine 153 mg (as hydrochloride) [3] and sulfadoxine + pyrimethamine 500 mg + 25 mg [1].
chloroquine*	Oral liquid: 50 mg/5 mL (as phosphate or sulfate). Tablet: 150 mg (as phosphate or sulfate). *For use only in central American regions, for <i>Plasmodium vivax</i> infections.
doxycycline [a]	Solid oral dosage form: 100 mg (as hydrochloride or hyclate). [a] > 8 years.
mefloquine [a]	Tablet: 250 mg (as hydrochloride). [a] > 5 kg or > 3 months.
proguanil*	Tablet: 100 mg (as hydrochloride). *For use only in combination with chloroquine.
sulfadoxine + pyrimethamine	Tablet: 250 mg + 12.5 mg [c]; 500 mg + 25 mg.
6.5.4 Antipneumocystosis and antitoxoplasmosis medicines	
pyrimethamine	Tablet: 25 mg.
sulfadiazine	Tablet: 500 mg.
sulfamethoxazole + trimethoprim	Injection: 80 mg + 16 mg/mL in 5 mL ampoule; 80 mg + 16 mg/mL in 10 mL ampoule. Oral liquid: 200 mg + 40 mg/5 mL [c]. Tablet: 100 mg + 20 mg; 400 mg + 80 mg [c]; 800 mg + 160 mg
Complementary List	
pentamidine	Tablet: 200 mg; 300 mg (as isethionate).
6.5.5 Antitrypanosomal medicines	
6.5.5.1 African trypanosomiasis	
fexinidazole*	Tablet: 600 mg *For the treatment of 1 st and 2 nd stage of human African trypanosomiasis due to <i>Trypanosoma brucei gambiense</i> infection.
Medicines for the treatment of 1st stage African trypanosomiasis	
pentamidine*	Powder for injection: 200 mg (as isetionate) in vial. *To be used for the treatment of <i>Trypanosoma brucei gambiense</i> infection.
suramin sodium*	Powder for injection: 1 g in vial. *To be used for the treatment of the initial phase of <i>Trypanosoma brucei rhodesiense</i> infection.

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Medicines for the treatment of 2 nd stage African trypanosomiasis	
eflornithine*	Injection: 200 mg/mL (hydrochloride) in 100 mL bottle. *To be used for the treatment of <i>Trypanosoma brucei gambiense</i> infection.
melarsoprol	Injection: 180 mg/5 mL in 5 mL ampoule (3.6% solution).
nifurtimox *	Tablet: 120 mg. *Only to be used in combination with eflornithine, for the treatment of <i>Trypanosoma brucei gambiense</i> infection.
Complementary List	
<i>melarsoprol [c]</i>	Injection: 180 mg/5 mL in 5 mL ampoule (3.6% solution).
6.5.5.2 American trypanosomiasis	
benznidazole	Tablet: 12.5 mg [c]; 100 mg. Tablet (scored): 50 mg.
nifurtimox	Tablet: 30 mg; 120 mg; 250 mg.
6.6 Medicines for ectoparasitic infections	
ivermectin	Tablet (scored): 3 mg
7. ANTIMIGRAINE MEDICINES	
7.1 For treatment of acute attack	
acetylsalicylic acid	Tablet: 300 mg to 500 mg.
ibuprofen [c]	Tablet: 200 mg; 400 mg.
paracetamol	Oral liquid: 120 mg/5 mL [c]; 125 mg/5 mL [c]. Tablet: 300 mg to 500 mg.
sumatriptan	Tablet: 50 mg
7.2 For prophylaxis	
□ propranolol Therapeutic alternatives to be reviewed (2023)	Tablet: 20 mg; 40 mg (hydrochloride).

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8. IMMUNOMODULATORS AND ANTINEOPLASTICS	
8.1 Immunomodulators for non-malignant disease	
Complementary List	
<input type="checkbox"/> <i>adalimumab</i> * Therapeutic alternatives*: - certolizumab pegol - etanercept - golimumab - infliximab *including quality-assured biosimilars	Injection: 40 mg/0.8 mL; 40 mg/0.4 mL.
<i>azathioprine</i>	Powder for injection: 100 mg (as sodium salt) in vial. Tablet (scored): 50 mg.
<i>ciclosporin</i>	Capsule: 25 mg. Concentrate for injection: 50 mg/mL in 1 mL ampoule.
<i>tacrolimus</i>	Capsule (immediate-release): 0.5 mg; 0.75 mg; 1 mg; 2 mg; 5 mg. Granules for oral suspension: 0.2 mg; 1 mg. Injection: 5 mg/mL in 1 mL vial.
8.2 Antineoplastics and supportive medicines	
Medicines listed below should be used according to protocols for treatment of the diseases.	
8.2.1 Cytotoxic medicines	
Complementary List	
<i>arsenic trioxide</i>	Concentrate for solution for infusion: 1 mg/mL – Acute promyelocytic leukaemia
<i>asparaginase</i> * *including quality-assured biosimilars	Powder for injection: 10 000 IU in vial. – Acute lymphoblastic leukaemia.
<i>bendamustine</i>	Injection: 45 mg/0.5 mL; 180 mg/2 mL. – Chronic lymphocytic leukaemia – Follicular lymphoma
<i>bleomycin</i>	Powder for injection: 15 mg (as sulfate) in vial. – Hodgkin lymphoma – Kaposi sarcoma – Ovarian germ cell tumour – Testicular germ cell tumour
<i>calcium folinate</i>	Injection: 3 mg/mL in 10 mL ampoule. Tablet: 5 mg; 15 mg; 25 mg. – Burkitt lymphoma – Early stage colon cancer – Early stage rectal cancer – Gestational trophoblastic neoplasia – Metastatic colorectal cancer – Osteosarcoma

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capecitabine	Tablet: 150 mg; 500 mg. – Early stage colon cancer – Early stage rectal cancer – Metastatic breast cancer – Metastatic colorectal cancer
carboplatin	Injection: 50 mg/5 mL; 150 mg/15 mL; 450 mg/45 mL; 600 mg/60 mL. – Cervical cancer – Early stage breast cancer – Epithelial ovarian cancer – Head and neck cancer (as a radio-sensitizer) – Low-grade glioma – Nasopharyngeal cancer – Nephroblastoma (Wilms tumour) – Non-small cell lung cancer – Osteosarcoma – Ovarian germ cell tumour – Retinoblastoma – Testicular germ cell tumour
chlorambucil	Tablet: 2 mg. – Chronic lymphocytic leukaemia
cisplatin	Injection: 10 mg/10 mL; 20 mg/20 mL; 50 mg/50 mL; 100 mg/100 mL. – Cervical cancer – Head and neck cancer (as a radio-sensitizer) – Low-grade glioma – Nasopharyngeal cancer (as a radio-sensitizer) – Non-small cell lung cancer – Osteosarcoma – Ovarian germ cell tumour – Testicular germ cell tumour
cyclophosphamide	Powder for injection: 500 mg; 1 g; 2 g in vial. Tablet: 25 mg, 50 mg. – Acute lymphoblastic leukaemia – Burkitt lymphoma – Chronic lymphocytic leukaemia – Diffuse large B-cell lymphoma – Early stage breast cancer – Ewing sarcoma – Follicular lymphoma – Gestational trophoblastic neoplasia – Hodgkin lymphoma – Low-grade glioma – Metastatic breast cancer – Multiple myeloma – Nephroblastoma (Wilms tumour) – Rhabdomyosarcoma
cytarabine	Powder for injection: 100 mg in vial. – Acute lymphoblastic leukaemia – Acute myeloid leukaemia – Acute promyelocytic leukaemia – Burkitt lymphoma.

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<i>dacarbazine</i>	Powder for injection: 100 mg in vial. – Hodgkin lymphoma
<i>dactinomycin</i>	Powder for injection: 500 micrograms in vial. – Ewing sarcoma – Gestational trophoblastic neoplasia – Nephroblastoma (Wilms tumour) – Rhabdomyosarcoma
<i>daunorubicin</i>	Powder for injection: 50 mg (hydrochloride) in vial. – Acute lymphoblastic leukaemia – Acute myeloid leukaemia – Acute promyelocytic leukaemia
<i>docetaxel</i>	Injection: 20 mg/mL; 40 mg/mL. – Early stage breast cancer – Metastatic breast cancer – Metastatic prostate cancer
<i>doxorubicin</i>	Powder for injection: 10 mg; 50 mg (hydrochloride) in vial. – Acute lymphoblastic leukaemia – Burkitt lymphoma – Diffuse large B-cell lymphoma – Early stage breast cancer – Ewing sarcoma – Follicular lymphoma – Hodgkin lymphoma – Kaposi sarcoma – Metastatic breast cancer – Multiple myeloma – Nephroblastoma (Wilms tumour) – Osteosarcoma
<i>etoposide</i>	Capsule: 50 mg, 100 mg. Injection: 20 mg/mL in 5 mL ampoule. – Acute lymphoblastic leukaemia – Acute myeloid leukaemia – Burkitt lymphoma – Ewing sarcoma – Gestational trophoblastic neoplasia – Hodgkin lymphoma – Nephroblastoma (Wilms tumour) – Non-small cell lung cancer – Osteosarcoma – Ovarian germ cell tumour – Retinoblastoma – Testicular germ cell tumour
<i>fludarabine</i>	Powder for injection: 50 mg (phosphate) in vial. Tablet: 10 mg – Chronic lymphocytic leukaemia.

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<i>fluorouracil</i>	Injection: 50 mg/mL in 5 mL ampoule. – Early stage breast cancer – Early stage colon cancer – Early stage rectal cancer – Metastatic colorectal cancer – Nasopharyngeal cancer
<i>gemcitabine</i>	Powder for injection: 200 mg; 1 g in vial. – Epithelial ovarian cancer – Non-small cell lung cancer
<i>hydroxycarbamide</i>	Solid oral dosage form: 200 mg; 250 mg; 300 mg; 400 mg; 500 mg; 1 g. – Chronic myeloid leukaemia
<i>ifosfamide</i>	Powder for injection: 500 mg; 1 g; 2 g in vial. – Burkitt lymphoma – Ewing sarcoma – Nephroblastoma (Wilms tumour) – Ovarian germ cell tumour – Osteosarcoma – Rhabdomyosarcoma – Testicular germ cell tumour
<i>irinotecan</i>	Injection: 40 mg/2 mL in 2 mL vial; 100 mg/5 mL in 5 mL vial; 500 mg/25 mL in 25 mL vial. – Metastatic colorectal cancer – Nephroblastoma (Wilms tumour) – Rhabdomyosarcoma
<i>melphalan</i>	Tablet: 2 mg Powder for injection: 50 mg in vial – Multiple myeloma.
<i>mercaptopurine</i>	Tablet: 50 mg. – Acute lymphoblastic leukaemia – Acute promyelocytic leukaemia.
<i>methotrexate</i>	Powder for injection: 50 mg (as sodium salt) in vial. Tablet: 2.5 mg (as sodium salt). – Acute lymphoblastic leukaemia – Acute promyelocytic leukaemia – Burkitt lymphoma – Early stage breast cancer – Gestational trophoblastic neoplasia – Osteosarcoma
<i>oxaliplatin</i>	Injection: 50 mg/10 mL in 10 mL vial; 100 mg/20 mL in 20 mL vial; 200 mg/40 mL in 40 mL vial. Powder for injection: 50 mg; 100 mg in vial. – Early stage colon cancer – Metastatic colorectal cancer

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<i>paclitaxel</i>	Injection: 6 mg/mL in vial. – Cervical cancer – Epithelial ovarian cancer – Early stage breast cancer – Metastatic breast cancer – Kaposi sarcoma – Nasopharyngeal cancer – Non-small cell lung cancer – Ovarian germ cell tumour
<i>pegaspargase*</i> <i>*including quality-assured biosimilars</i>	Injection: 3,750 units/5 mL in vial. – Acute lymphoblastic leukaemia
<i>procarbazine [c]</i>	Capsule: 50 mg (as hydrochloride). – Hodgkin lymphoma
<i>realgar-Indigo naturalis formulation</i>	Tablet: 270 mg (containing tetra-arsenic tetra-sulfide 30 mg). – Acute promyelocytic leukaemia
<i>tioguanine [c]</i>	Solid oral dosage form: 40 mg. – Acute lymphoblastic leukaemia
<i>vinblastine</i>	Injection: 10 mg/10 mL (sulfate) in vial. Powder for injection: 10 mg (sulfate) in vial. – Hodgkin lymphoma – Kaposi sarcoma – Low-grade glioma – Ovarian germ cell tumour – Testicular germ cell tumour
<i>vincristine</i>	Injection: 1 mg/mL (sulfate); 2 mg/2 mL (sulfate) in vial. Powder for injection: 1 mg; 5 mg (sulfate) in vial. – Acute lymphoblastic leukaemia – Burkitt lymphoma – Diffuse large B-cell lymphoma – Ewing sarcoma – Follicular lymphoma – Gestational trophoblastic neoplasia – Hodgkin lymphoma – Kaposi sarcoma – Low-grade glioma – Nephroblastoma (Wilms tumour) – Retinoblastoma – Rhabdomyosarcoma
<i>vinorelbine</i>	Capsule: 20 mg; 30 mg; 80 mg. Injection: 10 mg/mL in 1 mL vial; 50 mg/5 mL in 5 mL vial. – Non-small cell lung cancer – Metastatic breast cancer – Rhabdomyosarcoma

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8.2.2 Targeted therapies	
Complementary List	
<i>all-trans retinoid acid (ATRA)</i>	Capsule: 10 mg. – Acute promyelocytic leukaemia.
<i>bortezomib</i>	Powder for injection: 3.5 mg in vial. – Multiple myeloma
<i>dasatinib</i>	Tablet: 20 mg; 50 mg; 70 mg; 80 mg; 100 mg; 140 mg. – Imatinib-resistant chronic myeloid leukaemia
<input type="checkbox"/> <i>erlotinib</i> Therapeutic alternatives: - <i>afatinib</i> - <i>gefitinib</i>	Tablet: 100 mg, 150 mg. – EGFR mutation-positive advanced non-small cell lung cancer
<i>everolimus</i>	Tablet: 2.5 mg; 5 mg; 7.5 mg; 10 mg. Tablet (dispersible): 2 mg; 3 mg; 5 mg. – Subependymal giant cell astrocytoma
<i>ibrutinib</i>	Capsule: 140 mg. – Relapsed/refractory chronic lymphocytic leukaemia
<i>imatinib</i>	Solid oral dosage form: 100 mg; 400 mg. – Chronic myeloid leukaemia – Gastrointestinal stromal tumour – Philadelphia chromosome positive acute lymphoblastic leukaemia
<i>nilotinib</i>	Capsule: 150 mg; 200 mg. – Imatinib-resistant chronic myeloid leukaemia
<i>rituximab*</i> *including quality-assured biosimilars	Injection (intravenous): 100 mg/10 mL in 10 mL vial; 500 mg/50 mL in 50 mL vial. – Diffuse large B-cell lymphoma – Chronic lymphocytic leukaemia – Follicular lymphoma
<i>trastuzumab*</i> *including quality-assured biosimilars	Powder for injection: 60 mg; 150 mg; 440 mg in vial. – Early stage HER2 positive breast cancer – Metastatic HER2 positive breast cancer

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8.2.3 Immunomodulators	
Complementary List	
<p><i>filgrastim*</i></p> <p><i>*including quality-assured biosimilars</i></p>	<p>Injection: 120 micrograms/0.2 mL; 300 micrograms/0.5 mL; 480 micrograms/0.8 mL in pre-filled syringe.</p> <p>Injection: 300 micrograms/mL in 1 mL vial; 480 micrograms/1.6 mL in 1.6 mL vial.</p> <ul style="list-style-type: none"> – Primary prophylaxis in patients at high risk for developing febrile neutropenia associated with myelotoxic chemotherapy. – Secondary prophylaxis for patients who have experienced neutropenia following prior myelotoxic chemotherapy – To facilitate administration of dose dense chemotherapy regimens
<p><i>lenalidomide</i></p>	<p>Capsule: 25 mg.</p> <ul style="list-style-type: none"> – Multiple myeloma
<p><input type="checkbox"/> <i>nivolumab*</i></p> <p><i>Therapeutic alternatives*:</i></p> <ul style="list-style-type: none"> - pembrolizumab <p><i>*including quality-assured biosimilars</i></p>	<p>Concentrate solution for infusion: 10 mg/mL.</p> <ul style="list-style-type: none"> – Metastatic melanoma
<p><i>thalidomide</i></p>	<p>Capsule: 50 mg.</p> <ul style="list-style-type: none"> – Multiple myeloma
8.2.4 Hormones and antihormones	
Complementary List	
<p><input type="checkbox"/> <i>abiraterone</i></p> <p><i>Therapeutic alternatives:</i></p> <ul style="list-style-type: none"> - enzalutamide 	<p>Tablet: 250 mg; 500 mg.</p> <ul style="list-style-type: none"> – Metastatic castration-resistant prostate cancer
<p><input type="checkbox"/> <i>anastrozole</i></p> <p><i>Therapeutic alternatives:</i></p> <ul style="list-style-type: none"> - 4th level ATC chemical subgroup (L02BG Aromatase inhibitors) 	<p>Tablet: 1 mg.</p> <ul style="list-style-type: none"> – Early stage breast cancer – Metastatic breast cancer
<p><input type="checkbox"/> <i>bicalutamide</i></p> <p><i>Therapeutic alternatives:</i></p> <ul style="list-style-type: none"> - flutamide - nilutamide 	<p>Tablet: 50 mg.</p> <ul style="list-style-type: none"> – Metastatic prostate cancer
<p><i>dexamethasone</i></p>	<p>Injection: 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.</p> <p>Oral liquid: 2 mg/5 mL [c].</p> <p>Tablet: 2 mg [c]; 4 mg.</p> <ul style="list-style-type: none"> – Acute lymphoblastic leukaemia – Burkitt lymphoma – Multiple myeloma
<p><i>hydrocortisone</i></p>	<p>Powder for injection: 100 mg (as sodium succinate) in vial.</p> <ul style="list-style-type: none"> – Acute lymphoblastic leukaemia – Burkitt lymphoma

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<input type="checkbox"/> leuprorelin Therapeutic alternatives: - goserelin - triptorelin	Injection: 7.5 mg; 22.5 mg in pre-filled syringe. – Early stage breast cancer – Metastatic prostate cancer.
methylprednisolone [c]	Injection: 40 mg/mL (as sodium succinate) in 1 mL single-dose vial and 5 mL multi-dose vials; 80 mg/mL (as sodium succinate) in 1 mL single-dose vial. – Acute lymphoblastic leukaemia – Burkitt lymphoma
<input type="checkbox"/> prednisolone Therapeutic alternatives: - prednisone	Oral liquid: 5 mg/mL [c]. Tablet: 5 mg; 25 mg. – Acute lymphoblastic leukaemia – Burkitt lymphoma – Chronic lymphocytic leukaemia – Diffuse large B-cell lymphoma – Follicular lymphoma – Hodgkin lymphoma – Metastatic castration-resistant prostate cancer – Multiple myeloma
tamoxifen	Tablet: 10 mg; 20 mg (as citrate). – Early stage breast cancer – Metastatic breast cancer.
8.2.5 Supportive medicines	
Complementary List	
allopurinol [c]	Tablet: 100 mg; 300 mg. – Tumour lysis syndrome
mesna	Injection: 100 mg/mL in 4 mL and 10 mL ampoules. Tablet: 400 mg; 600 mg. – Burkitt lymphoma – Ewing sarcoma – Nephroblastoma (Wilms tumour) – Ovarian germ cell tumour – Osteosarcoma – Rhabdomyosarcoma – Testicular germ cell tumour
rasburicase	Powder and solvent for solution for infusion: 1.5 mg; 7.5 mg in vial – Tumour lysis syndrome
zoledronic acid	Concentrate solution for infusion: 4 mg/5 mL in 5 mL vial. Solution for infusion: 4 mg/100 mL in 100 mL bottle. – Malignancy-related bone disease

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9. ANTIPARKINSONISM MEDICINES	
<input type="checkbox"/> biperiden Therapeutic alternatives: – trihexyphenidyl	Injection: 5 mg (lactate) in 1 mL ampoule. Tablet: 2 mg (hydrochloride).
levodopa + <input type="checkbox"/> carbidopa Therapeutic alternatives: – benserazide (for carbidopa)	Tablet: 100 mg + 10 mg; 100 mg + 25 mg; 250 mg + 25 mg.
10. MEDICINES AFFECTING THE BLOOD	
10.1 Antianaemia medicines	
ferrous salt	Oral liquid: equivalent to 25 mg iron (as sulfate)/mL. Tablet: equivalent to 60 mg iron.
ferrous salt + folic acid	Tablet: equivalent to 60 mg iron + 400 micrograms folic acid. *nutritional supplement for use during pregnancy
folic acid	Tablet: 400 micrograms*; 1 mg; 5 mg. *periconceptual use for prevention of first occurrence of neural tube defects
hydroxocobalamin	Injection: 1 mg/mL (as acetate, as hydrochloride or as sulfate) in 1 mL ampoule.
Complementary List	
<input type="checkbox"/> erythropoiesis-stimulating agents* Therapeutic alternatives: - epoetin alfa, beta and theta - darbepoetin alfa - methoxy polyethylene glycol-epoetin beta *including quality-assured biosimilars	Injection: pre-filled syringe 1000 IU/0.5 mL; 2000 IU/0.5 mL; 3000 IU/0.3 mL; 4000 IU/0.4 mL; 5000 IU/0.5 mL; 6000 IU/0.6 mL; 8000 IU/0.8mL; 10 000 IU/1 mL; 20 000 IU/0.5 mL; 40 000 IU/1 mL.
10.2 Medicines affecting coagulation	
<input type="checkbox"/> dabigatran Therapeutic alternatives: - apixaban - edoxaban - rivaroxaban	Capsule: 110 mg; 150 mg.
<input type="checkbox"/> enoxaparin* Therapeutic alternatives*: - dalteparin - nadroparin *including quality-assured biosimilars	Injection: ampoule or pre-filled syringe 20 mg/0.2 mL; 40 mg/0.4 mL; 60 mg/0.6 mL; 80 mg/0.8 mL; 100 mg/1 mL; 120 mg/0.8 mL; 150 mg/1 mL.
heparin sodium	Injection: 1000 IU/mL; 5000 IU/mL; 20 000 IU/mL in 1 mL ampoule.
phytomenadione	Injection: 1 mg/mL [c]; 10 mg/mL in ampoule. Tablet: 10 mg.
protamine sulfate	Injection: 10 mg/mL in 5 mL ampoule.

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tranexamic acid	Injection: 100 mg/mL in 10 mL ampoule.
<input type="checkbox"/> warfarin Therapeutic alternatives to be reviewed (2023)	Tablet: 1 mg; 2 mg; 5 mg (sodium).
Complementary List	
<i>desmopressin</i> [c]	Injection: 4 micrograms/mL (as acetate) in 1 mL ampoule. Nasal spray: 10 micrograms (as acetate) per dose.
<i>heparin sodium</i> [c]	Injection: 1000 IU/mL; 5000 IU/mL in 1 mL ampoule.
<i>protamine sulfate</i> [c]	Injection: 10 mg/mL in 5 mL ampoule.
<input type="checkbox"/> warfarin [c] Therapeutic alternatives to be reviewed (2023)	Tablet: 0.5 mg; 1 mg; 2 mg; 5 mg (sodium).
10.3 Other medicines for haemoglobinopathies	
Complementary List	
<input type="checkbox"/> deferoxamine Therapeutic alternatives: - deferasirox (oral)	Powder for injection: 500 mg (mesilate) in vial.
<i>hydroxycarbamide</i>	Solid oral dosage form: 200 mg; 500 mg; 1 g.
11. BLOOD PRODUCTS OF HUMAN ORIGIN AND PLASMA SUBSTITUTES	
11.1 Blood and blood components	
In accordance with the World Health Assembly resolution WHA63.12, WHO recognizes that achieving self-sufficiency, unless special circumstances preclude it, in the supply of safe blood components based on voluntary, non-remunerated blood donation, and the security of that supply are important national goals to prevent blood shortages and meet the transfusion requirements of the patient population. All preparations should comply with the WHO requirements.	
fresh-frozen plasma	
platelets	
red blood cells	
whole blood	
11.2 Plasma-derived medicines	
All human plasma-derived medicines should comply with the WHO requirements.	
11.2.1 Human immunoglobulins	
anti-D immunoglobulin	Injection: 250 micrograms in single-dose vial.
anti-rabies immunoglobulin	Injection: 150 IU/mL in vial.
anti-tetanus immunoglobulin	Injection: 500 IU in vial.

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Complementary List	
normal immunoglobulin	Intramuscular administration: 16% protein solution.* Intravenous administration: 5%; 10% protein solution.** Subcutaneous administration: 15%; 16% protein solution.* <i>*Indicated for primary immune deficiency.</i> <i>**Indicated for primary immune deficiency and Kawasaki disease.</i>
11.2.2 Blood coagulation factors	
Complementary List	
<input type="checkbox"/> coagulation factor VIII Therapeutic alternatives to be reviewed (2023)	Powder for injection: 500 IU/vial.
<input type="checkbox"/> coagulation factor IX Therapeutic alternatives to be reviewed (2023)	Powder for injection: 500 IU/vial, 1000 IU/vial.
11.3 Plasma substitutes	
<input type="checkbox"/> dextran 70 Therapeutic alternatives: - Polygeline injectable solution 3.5%	Injectable solution: 6%.
12. CARDIOVASCULAR MEDICINES	
12.1 Antianginal medicines	
<input type="checkbox"/> bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	Tablet: 1.25 mg; 5 mg.
glyceryl trinitrate	Tablet (sublingual): 500 micrograms.
isosorbide dinitrate	Tablet (sublingual): 5 mg.
verapamil	Tablet: 40 mg; 80 mg (hydrochloride).
12.2 Antiarrhythmic medicines	
<input type="checkbox"/> bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	Tablet: 1.25 mg; 5 mg.
digoxin	Injection: 250 micrograms/mL in 2 mL ampoule. Oral liquid: 50 micrograms/mL. Tablet: 62.5 micrograms; 250 micrograms.
epinephrine (adrenaline)	Injection: 100 micrograms/mL (as acid tartrate or hydrochloride) in 10 mL ampoule.
lidocaine	Injection: 20 mg/mL (hydrochloride) in 5 mL ampoule.
verapamil	Injection: 2.5 mg/mL (hydrochloride) in 2 mL ampoule. Tablet: 40 mg; 80 mg (hydrochloride).

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<i>Complementary List</i>	
<i>amiodarone</i>	Injection: 50 mg/mL (hydrochloride) in 3 mL ampoule. Tablet: 100 mg; 200 mg; 400 mg (hydrochloride).
12.3 Antihypertensive medicines	
<input type="checkbox"/> amlodipine Therapeutic alternatives: - 4 th level ATC chemical subgroup (C08CA Dihydropyridine derivatives)	Tablet: 5 mg (as maleate, mesylate or besylate).
<input type="checkbox"/> bisoprolol Therapeutic alternatives: - atenolol* - carvedilol - metoprolol	Tablet: 1.25 mg; 5 mg. *atenolol should not be used as a first-line agent in uncomplicated hypertension in patients > 60 years
<input type="checkbox"/> enalapril Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	Tablet: 2.5 mg; 5 mg (as hydrogen maleate).
hydralazine*	Powder for injection: 20 mg (hydrochloride) in ampoule. Tablet: 25 mg; 50 mg (hydrochloride). *Hydralazine is listed for use only in the acute management of severe pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.
<input type="checkbox"/> hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlorthalidone - indapamide	Oral liquid: 50 mg/5 mL. Solid oral dosage form: 12.5 mg; 25 mg.
<input type="checkbox"/> lisinopril + <input type="checkbox"/> amlodipine Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09AA ACE inhibitors, plain) (for lisinopril) - 4 th level ATC chemical subgroup (C08CA Dihydropyridine derivatives) (for amlodipine)	Tablet: 10 mg + 5 mg; 20 mg + 5 mg; 20 mg + 10 mg.
<input type="checkbox"/> lisinopril + <input type="checkbox"/> hydrochlorothiazide Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09AA ACE inhibitors, plain) (for lisinopril) - chlorthalidone, chlorothiazide, indapamide (for hydrochlorothiazide)	Tablet: 10 mg + 12.5 mg; 20 mg + 12.5 mg; 20 mg + 25 mg.
<input type="checkbox"/> losartan Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain)	Tablet: 25 mg; 50 mg; 100 mg.

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methyldopa*	<p>Tablet: 250 mg.</p> <p>*Methyldopa is listed for use only in the management of pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.</p>
<input type="checkbox"/> telmisartan + <input type="checkbox"/> amlodipine Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain) (for telmisartan) - 4 th level ATC chemical subgroup (C08CA Dihydropyridine derivatives) (for amlodipine)	<p>Tablet: 40 mg + 5 mg; 80 mg + 5 mg; 80 mg + 10 mg.</p>
<input type="checkbox"/> telmisartan + <input type="checkbox"/> hydrochlorothiazide Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain) (for telmisartan) - chlorthalidone, chlorothiazide, indapamide (for hydrochlorothiazide)	<p>Tablet: 40 mg + 12.5 mg; 80 mg + 12.5 mg; 80 mg + 25 mg.</p>
Complementary List	
sodium nitroprusside	Powder for infusion: 50 mg in ampoule.
12.4 Medicines used in heart failure	
<input type="checkbox"/> bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	<p>Tablet: 1.25 mg; 5 mg.</p>
digoxin	<p>Injection: 250 micrograms/mL in 2 mL ampoule.</p> <p>Oral liquid: 50 micrograms/mL.</p> <p>Tablet: 62.5 micrograms; 250 micrograms.</p>
<input type="checkbox"/> enalapril Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	<p>Tablet: 2.5 mg; 5 mg (as hydrogen maleate).</p>
<input type="checkbox"/> furosemide Therapeutic alternatives: - bumetanide - torasemide	<p>Injection: 10 mg/mL in 2 mL ampoule.</p> <p>Oral liquid: 20 mg/5 mL [c].</p> <p>Tablet: 40 mg.</p>
<input type="checkbox"/> hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlorthalidone - indapamide	<p>Oral liquid: 50 mg/5 mL.</p> <p>Solid oral dosage form: 25 mg.</p>
<input type="checkbox"/> losartan Therapeutic alternatives: - 4 th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain)	<p>Tablet: 25 mg; 50 mg; 100 mg.</p>

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spironolactone	Tablet: 25 mg.
<i>Complementary List</i>	
dopamine	<i>Injection: 40 mg/mL (hydrochloride) in 5 mL vial.</i>
12.5 Antithrombotic medicines	
12.5.1 Anti-platelet medicines	
acetylsalicylic acid	Tablet: 100 mg.
clopidogrel	Tablet: 75 mg; 300 mg
12.5.2 Thrombolytic medicines	
<i>Complementary List</i>	
alteplase	<i>Powder for injection: 10 mg; 20 mg; 50 mg in vial</i>
streptokinase	<i>Powder for injection: 1.5 million IU in vial.</i>
12.6 Lipid-lowering agents	
<input type="checkbox"/> simvastatin* Therapeutic alternatives: - atorvastatin - fluvastatin - lovastatin - pravastatin	Tablet: 5 mg; 10 mg; 20 mg; 40 mg. *For use in high-risk patients.
13. DERMATOLOGICAL MEDICINES (topical)	
13.1 Antifungal medicines	
<input type="checkbox"/> miconazole Therapeutic alternatives: - 4 th level ATC chemical subgroup (D01AC Imidazole and triazole derivatives) excluding combinations	Cream or ointment: 2% (nitrate).
selenium sulfide	Detergent-based suspension: 2%.
sodium thiosulfate	Solution: 15%.
terbinafine	Cream or ointment: 1% (hydrochloride).

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13.2 Anti-infective medicines	
mupirocin	Cream: 2% (as calcium). Ointment: 2%.
potassium permanganate	Aqueous solution: 1:10 000.
silver sulfadiazine <input type="checkbox"/>	Cream: 1%. <input type="checkbox"/> > 2 months.
13.3 Anti-inflammatory and antipruritic medicines	
<input type="checkbox"/> betamethasone <input type="checkbox"/> Therapeutic alternatives: - 4 th level ATC chemical subgroup (D07AC Corticosteroids, potent (group III))	Cream or ointment: 0.1% (as valerate). <input type="checkbox"/> Hydrocortisone preferred in neonates.
calamine	Lotion.
<input type="checkbox"/> hydrocortisone Therapeutic alternatives: - 4 th level ATC chemical subgroup (D07AA Corticosteroids, weak (group I))	Cream or ointment: 1% (acetate).
13.4 Medicines affecting skin differentiation and proliferation	
benzoyl peroxide	Cream or lotion: 5%.
<input type="checkbox"/> calcipotriol Therapeutic alternatives: - calcitriol - tacalcitol	Cream or ointment: 50 micrograms/mL (0.005%). Lotion: 50 micrograms/mL (0.005%).
coal tar	Solution: 5%.
fluorouracil	Ointment: 5%.
<input type="checkbox"/> podophyllum resin Therapeutic alternatives: - podophyllotoxin	Solution: 10% to 25%.
salicylic acid	Solution: 5%.
urea	Cream or ointment: 5%; 10%.
13.5 Scabicides and pediculicides	
<input type="checkbox"/> benzyl benzoate <input type="checkbox"/> Therapeutic alternatives: - precipitated sulfur topical ointment	Lotion: 25%. <input type="checkbox"/> > 2 years.
permethrin	Cream: 5%. Lotion: 1%.

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14. DIAGNOSTIC AGENTS	
14.1 Ophthalmic medicines	
fluorescein	Eye drops: 1% (sodium salt).
<input type="checkbox"/> tropicamide Therapeutic alternatives: - atropine - cyclopentolate	Eye drops: 0.5%.
14.2 Radiocontrast media	
<input type="checkbox"/> amidotrizoate Therapeutic alternatives to be reviewed (2023)	Injection: 140 mg to 420 mg iodine/mL (as sodium or meglumine salt) in 20 mL ampoule.
barium sulfate	Aqueous suspension.
<input type="checkbox"/> iohexol Therapeutic alternatives to be reviewed (2023)	Injection: 140 mg to 350 mg iodine/mL in 5 mL; 10 mL; 20 mL ampoules.
Complementary List	
<i>barium sulfate [c]</i>	Aqueous suspension.
<input type="checkbox"/> meglumine iotroxate Therapeutic alternatives to be reviewed (2023)	Solution: 5 g to 8 g iodine in 100 mL to 250 mL.
15. ANTISEPTICS AND DISINFECTANTS	
15.1 Antiseptics	
<input type="checkbox"/> chlorhexidine Therapeutic alternatives to be reviewed (2023)	Solution: 5% (digluconate).
<input type="checkbox"/> ethanol Therapeutic alternatives: - propanol	Solution: 70% (denatured).
<input type="checkbox"/> povidone iodine Therapeutic alternatives: - iodine	Solution: 10% (equivalent to 1% available iodine).
15.2 Disinfectants	
alcohol based hand rub	Solution: containing ethanol 80% volume/volume. Solution: containing isopropyl alcohol 75% volume/volume.
chlorine base compound	Liquid: (0.1% available chlorine) for solution. Powder: (0.1% available chlorine) for solution. Solid: (0.1% available chlorine) for solution.

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<input type="checkbox"/> chloroxylenol Therapeutic alternatives: - 4 th level ATC chemical subgroup (D08AE Phenol and derivatives)	Solution: 4.8%.
glutaral	Solution: 2%.
16. DIURETICS	
amiloride	Tablet: 5 mg (hydrochloride).
<input type="checkbox"/> furosemide Therapeutic alternatives: - bumetanide - torasemide	Injection: 10 mg/mL in 2 mL ampoule. Oral liquid: 20 mg/5 mL [c]. Tablet: 10 mg [c]; 20 mg [c]; 40 mg.
<input type="checkbox"/> hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlortalidone - indapamide	Solid oral dosage form: 25 mg.
mannitol	Injectable solution: 10%; 20%.
spironolactone	Tablet: 25 mg.
Complementary List	
<input type="checkbox"/> hydrochlorothiazide[c] Therapeutic alternatives: - chlorothiazide - chlortalidone	Tablet (scored): 25 mg.
mannitol [c]	Injectable solution: 10%; 20%.
spironolactone[c]	Oral liquid: 5 mg/5 mL; 10 mg/5 mL; 25 mg/5 mL. Tablet: 25 mg.
17. GASTROINTESTINAL MEDICINES	
Complementary List	
pancreatic enzymes[c]	Age-appropriate formulations and doses including lipase, protease and amylase.
17.1 Antiulcer medicines	
<input type="checkbox"/> omeprazole Therapeutic alternatives: - 4 th level ATC chemical subgroup (A02BC Proton pump inhibitors) excluding combinations	Powder for injection: 40 mg in vial Powder for oral liquid: 20 mg; 40 mg sachets. Solid oral dosage form: 10 mg; 20 mg; 40 mg.
<input type="checkbox"/> ranitidine Therapeutic alternatives: - 4 th level ATC chemical subgroup (A02BA H ₂ -receptor antagonists) excluding combinations	Injection: 25 mg/mL (as hydrochloride) in 2 mL ampoule. Oral liquid: 75 mg/5 mL (as hydrochloride). Tablet: 150 mg (as hydrochloride).

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17.2 Antiemetic medicines	
dexamethasone	Injection: 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule. Oral liquid: 0.5 mg/5 mL; 2 mg/5 mL. Solid oral dosage form: 0.5 mg; 0.75 mg; 1.5 mg; 4 mg.
metoclopramide ^a	Injection: 5 mg/mL (hydrochloride) in 2 mL ampoule. Oral liquid: 5 mg/5 mL [c]. Tablet: 10 mg (hydrochloride). ^a Not in neonates.
<input type="checkbox"/> ondansetron ^a Therapeutic alternatives: - dolasetron - granisetron - palonosetron - tropisetron	Injection: 2 mg base/mL in 2 mL ampoule (as hydrochloride). Oral liquid: 4 mg base/5 mL. Solid oral dosage form: Eq 4 mg base; Eq 8 mg base; Eq 24 mg base. ^a > 1 month.
Complementary list	
aprepitant	Capsule: 80 mg; 125 mg; 165 mg Powder for oral suspension: 125 mg in sachet
17.3 Anti-inflammatory medicines	
<input type="checkbox"/> sulfasalazine Therapeutic alternatives: - mesalazine	Retention enema. Suppository: 500 mg. Tablet: 500 mg.
Complementary List	
hydrocortisone	Retention enema: 100 mg/60 mL. Suppository: 25 mg (acetate).
prednisolone	Retention enema: 20 mg/100 mL (as sodium phosphate).
17.4 Laxatives	
<input type="checkbox"/> senna Therapeutic alternatives: - bisacodyl	Tablet: 7.5 mg (sennosides) (or traditional dosage forms).
17.5 Medicines used in diarrhoea	
oral rehydration salts – zinc sulfate [c]	Co-package containing: ORS powder for dilution (see Section 17.5.1) – zinc sulfate solid oral dosage form 20 mg (see Section 17.5.2)

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17.5.1 Oral rehydration	
oral rehydration salts	<p>Powder for dilution in 200 mL; 500 mL; 1 L.</p> <p>glucose: 75 mEq sodium: 75 mEq or mmol/L chloride: 65 mEq or mmol/L potassium: 20 mEq or mmol/L citrate: 10 mmol/L osmolarity: 245 mOsm/L glucose: 13.5 g/L sodium chloride: 2.6 g/L potassium chloride: 1.5 g/L trisodium citrate dihydrate*: 2.9 g/L</p> <p>*trisodium citrate dihydrate may be replaced by sodium hydrogen carbonate (sodium bicarbonate) 2.5 g/L. However, as the stability of this latter formulation is very poor under tropical conditions, it is recommended only when manufactured for immediate use.</p>
17.5.2 Medicines for diarrhoea	
zinc sulfate*	<p>Solid oral dosage form: 20 mg.</p> <p>*In acute diarrhoea zinc sulfate should be used as an adjunct to oral rehydration salts.</p>
18. MEDICINES FOR ENDOCRINE DISORDERS	
18.1 Adrenal hormones and synthetic substitutes	
fludrocortisone	Tablet: 100 micrograms (acetate).
hydrocortisone	Tablet: 5 mg; 10 mg; 20 mg.
18.2 Androgens	
<i>Complementary List</i>	
<i>testosterone</i>	Injection: 200 mg (enanthate) in 1 mL ampoule.
18.3 Estrogens	
18.4 Progestogens	
<input type="checkbox"/> medroxyprogesterone acetate Therapeutic alternatives: - norethisterone	Tablet: 5 mg.

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18.5 Medicines for diabetes	
18.5.1 Insulins	
insulin injection (soluble)* <i>*including quality-assured biosimilars</i>	Injection: 40 IU/mL in 10 mL vial; 100 IU/mL in 10 mL vial.
intermediate-acting insulin* <i>*including quality-assured biosimilars</i>	Injection: 40 IU/mL in 10 mL vial; 100 IU/mL in 10 mL vial (as compound insulin zinc suspension or isophane insulin).
<input type="checkbox"/> long-acting insulin analogues* Therapeutic alternatives: - insulin degludec - insulin detemir - insulin glargine <i>*including quality-assured biosimilars</i>	Injection: 100 IU/mL in 3 mL cartridge or pre-filled pen.
18.5.2 Oral hypoglycaemic agents	
<input type="checkbox"/> empagliflozin Therapeutic alternatives: - canagliflozin - dapagliflozin	Tablet: 10 mg; 25 mg.
<input type="checkbox"/> gliclazide* Therapeutic alternatives: - 4 th level ATC chemical subgroup (A10BB Sulfonylureas)	Solid oral dosage form: (controlled-release tablets) 30 mg; 60 mg; 80 mg. <i>*glibenclamide not suitable above 60 years.</i>
metformin	Tablet: 500 mg (hydrochloride).
Complementary List	
<i>metformin [c]</i>	Tablet: 500 mg (hydrochloride).
18.6 Medicines for hypoglycaemia	
glucagon	Injection: 1 mg/mL.
Complementary List	
<i>diazoxide [c]</i>	Oral liquid: 50 mg/mL. Tablet: 50 mg.
18.7 Thyroid hormones and antithyroid medicines	
levothyroxine	Tablet: 25 micrograms [c]; 50 micrograms; 100 micrograms (sodium salt).
potassium iodide	Tablet: 60 mg.
<input type="checkbox"/> methimazole Therapeutic alternatives: - carbimazole (depending on local availability)	Tablet: 5mg, 10mg, 20mg.
propylthiouracil*	Tablet: 50 mg. <i>*For use when alternative first-line treatment is not appropriate or available; and in patients during the first trimester of pregnancy.</i>

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Complementary List	
<i>Lugol's solution [c]</i>	<i>Oral liquid: about 130 mg total iodine/mL.</i>
<input type="checkbox"/> <i>methimazole [c]</i> <i>Therapeutic alternatives:</i> - carbimazole (depending on local availability)	<i>Tablet: 5mg, 10mg, 20mg.</i>
<i>potassium iodide [c]</i>	<i>Tablet: 60 mg.</i>
<i>propylthiouracil* [c]</i>	<i>Tablet: 50 mg.</i> <i>*For use when alternative first-line treatment is not appropriate or available</i>
19. IMMUNOLOGICALS	
19.1 Diagnostic agents	
All tuberculins should comply with the WHO requirements for tuberculins.	
tuberculin, purified protein derivative (PPD)	Injection.
19.2 Sera, immunoglobulins and monoclonal antibodies	
All plasma fractions should comply with the WHO requirements.	
anti-rabies virus monoclonal antibodies* <i>*including quality-assured biosimilars</i>	Injection: 40 IU/mL in 1.25 mL, 2.5 mL vial; 100 IU/mL in 2.5 mL vial (human). Injection: 300 IU/mL in 10 mL vial; 600 IU/mL in 1 mL, 2.5 mL and 5 mL vial (murine).
antivenom immunoglobulin*	Injection. <i>*Exact type to be defined locally.</i>
diphtheria antitoxin	Injection: 10 000 IU; 20 000 IU in vial.
equine rabies immunoglobulin	Injection: 150 IU/mL; 200 IU/mL; 300 IU/mL; 400 IU/mL in vial.

WHO Model List of Essential Medicines – 22nd List (2021)

19.3 Vaccines

WHO immunization policy recommendations are published in vaccine position papers based on recommendations made by the Strategic Advisory Group of Experts on Immunization (SAGE).

WHO vaccine position papers are updated three to four times per year. The list below details the vaccines for which there is a recommendation from SAGE and a corresponding WHO position paper as at September 2020. The most recent versions of the WHO position papers, reflecting the current evidence related to a specific vaccine and the related recommendations, can be accessed at any time on the WHO website at:

<https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers>

Vaccine recommendations may be universal or conditional (e.g., in certain regions, in some high-risk populations or as part of immunization programmes with certain characteristics). Details are available in the relevant position papers, and in the Summary Tables of WHO Routine Immunization Recommendations available on the WHO website at:

<https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/who-recommendations-for-routine-immunization---summary-tables>

Selection of vaccines from the Model List will need to be determined by each country after consideration of international recommendations, epidemiology and national priorities.

All vaccines should comply with the WHO requirements for biological substances.

WHO noted the need for vaccines used in children to be polyvalent.

Recommendations for all

BCG vaccine

diphtheria vaccine

Haemophilus influenzae type b vaccine

hepatitis B vaccine

human papilloma virus (HPV) vaccine

measles vaccine

pertussis vaccine

pneumococcal vaccine

poliomyelitis vaccine

rotavirus vaccine

rubella vaccine

tetanus vaccine

Recommendations for certain regions

Japanese encephalitis vaccine

tick-borne encephalitis vaccine

yellow fever vaccine

Recommendations for some high-risk populations

cholera vaccine

dengue vaccine

hepatitis A vaccine

meningococcal meningitis vaccine

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rabies vaccine	
typhoid vaccine	
<i>Recommendations for immunization programmes with certain characteristics</i>	
influenza vaccine (seasonal)	
mumps vaccine	
varicella vaccine	
20. MUSCLE RELAXANTS (PERIPHERALLY-ACTING) AND CHOLINESTERASE INHIBITORS	
<input type="checkbox"/> atracurium Therapeutic alternatives to be reviewed (2023)	Injection: 10 mg/mL (besylate).
neostigmine	Injection: 500 micrograms/mL (methylsulfate) in 1 mL ampoule; 2.5 mg/mL (methylsulfate) in 1 mL ampoule. Tablet: 15 mg (bromide).
suxamethonium	Injection: 50 mg/mL (chloride) in 2 mL ampoule. Powder for injection: (chloride), in vial.
<input type="checkbox"/> vecuronium [c] Therapeutic alternatives to be reviewed (2023)	Powder for injection: 10 mg (bromide) in vial.
Complementary List	
pyridostigmine	Injection: 1 mg in 1 mL ampoule. Tablet: 60 mg (bromide).
<input type="checkbox"/> vecuronium Therapeutic alternatives to be reviewed (2023)	Powder for injection: 10 mg (bromide) in vial.
21. OPHTHALMOLOGICAL PREPARATIONS	
21.1 Anti-infective agents	
aciclovir	Ointment: 3% W/W.
azithromycin	Solution (eye drops): 1.5%. – <i>Trachoma</i>
erythromycin	Ointment: 0.5% [c] – <i>Infections due to Chlamydia trachomatis or Neisseria gonorrhoea.</i>
<input type="checkbox"/> gentamicin Therapeutic alternatives: - amikacin - kanamycin - netilmicin - tobramycin	Solution (eye drops): 0.3% (sulfate). – <i>Bacterial blepharitis</i> – <i>Bacterial conjunctivitis</i>

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natamycin	Suspension (eye drops): 5% – <i>Fungal keratitis</i>
<input type="checkbox"/> ofloxacin Therapeutic alternatives: - 4 th level ATC chemical subgroup (S01AE Fluoroquinolones)	Solution (eye drops): 0.3%. – <i>Bacterial conjunctivitis</i> – <i>Bacterial keratitis</i>
<input type="checkbox"/> tetracycline Therapeutic alternatives: - chlortetracycline - oxytetracycline	Eye ointment: 1% (hydrochloride). – <i>Bacterial blepharitis</i> – <i>Bacterial conjunctivitis</i> – <i>Bacterial keratitis</i> – <i>Trachoma</i>
21.2 Anti-inflammatory agents	
<input type="checkbox"/> prednisolone Therapeutic alternatives to be reviewed (2023)	Solution (eye drops): 0.5% (sodium phosphate).
21.3 Local anaesthetics	
<input type="checkbox"/> tetracaine ^a Therapeutic alternatives: - 4 th level ATC chemical subgroup (S01HA Local anaesthetics) excluding cocaine and combinations	Solution (eye drops): 0.5% (hydrochloride). ^a Not in preterm neonates.
21.4 Miotics and antiglaucoma medicines	
acetazolamide	Tablet: 250 mg.
latanoprost	Solution (eye drops): 50 micrograms/mL
<input type="checkbox"/> pilocarpine Therapeutic alternatives: - carbachol	Solution (eye drops): 2%; 4% (hydrochloride or nitrate).
<input type="checkbox"/> timolol Therapeutic alternatives: - 4 th level ATC chemical subgroup (S01ED Beta blocking agents) excluding combinations	Solution (eye drops): 0.25%; 0.5% (as hydrogen maleate).
21.5 Mydriatics	
<input type="checkbox"/> atropine ^a Therapeutic alternatives*: - cyclopentolate hydrochloride - homatropine hydrobromide *EMLc only	Solution (eye drops): 0.1%; 0.5%; 1% (sulfate). ^a > 3 months.
Complementary List	
epinephrine (adrenaline)	Solution (eye drops): 2% (as hydrochloride).
21.6 Anti-vascular endothelial growth factor (VEGF) preparations	
Complementary List	
bevacizumab* *including quality-assured biosimilars	Injection: 25 mg/mL.

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22. MEDICINES FOR REPRODUCTIVE HEALTH AND PERINATAL CARE	
22.1 Contraceptives	
22.1.1 Oral hormonal contraceptives	
□ ethinylestradiol + □ levonorgestrel Therapeutic alternatives to be reviewed (2023)	Tablet: 30 micrograms + 150 micrograms.
□ ethinylestradiol + □ norethisterone Therapeutic alternatives to be reviewed (2023)	Tablet: 35 micrograms + 1 mg.
levonorgestrel	Tablet: 30 micrograms; 750 micrograms (pack of two); 1.5 mg.
ulipristal	Tablet: 30 mg (as acetate)
22.1.2 Injectable hormonal contraceptives	
estradiol cypionate + medroxyprogesterone acetate	Injection: 5 mg + 25 mg.
medroxyprogesterone acetate	Injection (intramuscular): 150 mg/mL in 1 mL vial. Injection (subcutaneous): 104 mg/0.65 mL in pre-filled syringe or single-dose injection delivery system.
norethisterone enantate	Oily solution: 200 mg/mL in 1 mL ampoule.
22.1.3 Intrauterine devices	
copper-containing device	
levonorgestrel-releasing intrauterine system	Intrauterine system: with reservoir containing 52 mg of levonorelrel
22.1.4 Barrier methods	
condoms	
diaphragms	
22.1.5 Implantable contraceptives	
etonogestrel-releasing implant	Single-rod etonogestrel-releasing implant: containing 68 mg of etonogestrel.
levonorgestrel-releasing implant	Two-rod levonorgestrel-releasing implant: each rod containing 75 mg of levonorgestrel (150 mg total).
22.1.6 Intravaginal contraceptives	
ethinylestradiol + etonogestrel	Vaginal ring: containing 2.7 mg + 11.7 mg
progesterone vaginal ring*	Progesterone-releasing vaginal ring: containing 2.074 g of micronized progesterone. *For use in women actively breastfeeding at least 4 times per day
22.2 Ovulation inducers	
Complementary List	
clomifene	Tablet: 50 mg (citrate).

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22.3 Uterotonics																															
carbetocin	Injection (heat stable): 100 micrograms/mL																														
<input type="checkbox"/> ergometrine Therapeutic alternatives: - methylergometrine	Injection: 200 micrograms (hydrogen maleate) in 1 mL ampoule.																														
mifepristone – misoprostol <div style="border: 1px solid black; padding: 5px; display: inline-block;">Where permitted under national law and where culturally acceptable.</div>	Tablet 200 mg – tablet 200 micrograms. Co-package containing: mifepristone 200 mg tablet [1] and misoprostol 200 micrograms tablet [4]																														
misoprostol	Tablet: 200 micrograms. – Management of incomplete abortion and miscarriage; – Prevention and treatment of postpartum haemorrhage where oxytocin is not available or cannot be safely used Vaginal tablet: 25 micrograms.* *Only for use for induction of labour where appropriate facilities are available.																														
oxytocin	Injection: 10 IU in 1 mL.																														
22.4 Antioxytocics (tocolytics)																															
nifedipine	Immediate-release capsule: 10 mg.																														
22.5 Other medicines administered to the mother																															
dexamethasone	Injection: 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.																														
multiple micronutrient supplement*	Tablet containing: <table> <tr> <td>Vitamin A (retinol acetate)</td><td>800 micrograms retinol activity equivalent</td></tr> <tr> <td>Vitamin C (ascorbic acid)</td><td>70 mg</td></tr> <tr> <td>Vitamin D (cholecalciferol)</td><td>5 micrograms (200 IU)</td></tr> <tr> <td>Vitamin E (alpha tocopherol succinate)</td><td>10 mg alpha tocopherol equivalent</td></tr> <tr> <td>Vitamin B1 (thiamine mononitrate)</td><td>1.4 mg</td></tr> <tr> <td>Vitamin B2 (riboflavin)</td><td>1.4 mg</td></tr> <tr> <td>Vitamin B3 (niacinamide)</td><td>18 mg niacin equivalent</td></tr> <tr> <td>Vitamin B6 (pyridoxine hydrochloride)</td><td>1.9 mg</td></tr> <tr> <td>Folic acid (folic acid)</td><td>680 micrograms dietary folate equivalent (400 micrograms)</td></tr> <tr> <td>Vitamin B12 (cyanocobalamin)</td><td>2.6 micrograms</td></tr> <tr> <td>Iron (ferrous fumarate)</td><td>30 mg</td></tr> <tr> <td>Iodine (potassium iodide)</td><td>150 micrograms</td></tr> <tr> <td>Zinc (zinc oxide)</td><td>15 mg</td></tr> <tr> <td>Selenium (sodium selenite)</td><td>65 micrograms</td></tr> <tr> <td>Copper (cupric oxide)</td><td>2 mg</td></tr> </table> *For use in specific contexts. Refer to current WHO recommendations.	Vitamin A (retinol acetate)	800 micrograms retinol activity equivalent	Vitamin C (ascorbic acid)	70 mg	Vitamin D (cholecalciferol)	5 micrograms (200 IU)	Vitamin E (alpha tocopherol succinate)	10 mg alpha tocopherol equivalent	Vitamin B1 (thiamine mononitrate)	1.4 mg	Vitamin B2 (riboflavin)	1.4 mg	Vitamin B3 (niacinamide)	18 mg niacin equivalent	Vitamin B6 (pyridoxine hydrochloride)	1.9 mg	Folic acid (folic acid)	680 micrograms dietary folate equivalent (400 micrograms)	Vitamin B12 (cyanocobalamin)	2.6 micrograms	Iron (ferrous fumarate)	30 mg	Iodine (potassium iodide)	150 micrograms	Zinc (zinc oxide)	15 mg	Selenium (sodium selenite)	65 micrograms	Copper (cupric oxide)	2 mg
Vitamin A (retinol acetate)	800 micrograms retinol activity equivalent																														
Vitamin C (ascorbic acid)	70 mg																														
Vitamin D (cholecalciferol)	5 micrograms (200 IU)																														
Vitamin E (alpha tocopherol succinate)	10 mg alpha tocopherol equivalent																														
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Iron (ferrous fumarate)	30 mg																														
Iodine (potassium iodide)	150 micrograms																														
Zinc (zinc oxide)	15 mg																														
Selenium (sodium selenite)	65 micrograms																														
Copper (cupric oxide)	2 mg																														
tranexamic acid	Injection: 100 mg/mL in 10 mL ampoule																														
22.6 Medicines administered to the neonate [c]																															
caffeine citrate [c]	Injection: 20 mg/mL (equivalent to 10 mg caffeine base/mL). Oral liquid: 20 mg/mL (equivalent to 10 mg caffeine base/mL).																														
chlorhexidine [c]	Solution or gel: 7.1% (digluconate) delivering 4% chlorhexidine (for umbilical cord care).																														

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Complementary List	
<input type="checkbox"/> <i>ibuprofen [c]</i> Therapeutic alternatives: - <i>indometacin</i>	Solution for injection: 5 mg/mL.
<input type="checkbox"/> <i>prostaglandin E1 [c]</i> Therapeutic alternatives: - <i>prostaglandin E2</i>	Solution for injection: 0.5 mg/mL in alcohol.
<i>surfactant [c]</i>	Suspension for intratracheal instillation: 25 mg/mL or 80 mg/mL.
23. PERITONEAL DIALYSIS SOLUTION	
Complementary List	
<i>intraperitoneal dialysis solution (of appropriate composition)</i>	Parenteral solution.
24. MEDICINES FOR MENTAL AND BEHAVIOURAL DISORDERS	
24.1 Medicines used in psychotic disorders	
<input type="checkbox"/> <i>chlorpromazine</i> Therapeutic alternatives to be reviewed (2023)	Injection: 25 mg/mL (hydrochloride) in 2 mL ampoule. Oral liquid: 25 mg/5 mL (hydrochloride). Tablet: 100 mg (hydrochloride).
<input type="checkbox"/> <i>fluphenazine</i> Therapeutic alternatives to be reviewed (2023)	Injection: 25 mg (decanoate or enantate) in 1 mL ampoule.
<input type="checkbox"/> <i>haloperidol</i> Therapeutic alternatives to be reviewed (2023)	Injection: 5 mg in 1 mL ampoule. Tablet: 2 mg; 5 mg.
<input type="checkbox"/> <i>paliperidone</i> Therapeutic alternatives: - <i>risperidone injection</i>	Injection (prolonged-release): 25 mg; 50 mg; 75 mg; 100 mg; 150 mg (as palmitate) in pre-filled syringe
<i>risperidone</i>	Solid oral dosage form: 0.25 mg to 6.0 mg.
Complementary List	
<i>chlorpromazine [c]</i>	Injection: 25 mg/mL (hydrochloride) in 2 mL ampoule. Oral liquid: 25 mg/5 mL (hydrochloride). Tablet: 10 mg; 25 mg; 50 mg; 100 mg (hydrochloride).
<i>clozapine</i>	Solid oral dosage form: 25 to 200 mg.
<i>haloperidol [c]</i>	Injection: 5 mg in 1 mL ampoule. Oral liquid: 2 mg/mL. Solid oral dosage form: 0.5 mg; 2 mg; 5 mg.

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24.2 Medicines used in mood disorders	
24.2.1 Medicines used in depressive disorders	
<input type="checkbox"/> amitriptyline Therapeutic alternatives to be reviewed (2023)	Tablet: 25 mg; 75mg. (hydrochloride).
<input type="checkbox"/> fluoxetine Therapeutic alternatives: - citalopram - escitalopram - fluvoxamine - paroxetine - sertraline	Solid oral dosage form: 20 mg (as hydrochloride).
Complementary List	
fluoxetine <input type="checkbox"/> [c]	Solid oral dosage form: 20 mg (as hydrochloride). <input type="checkbox"/> > 8 years.
24.2.2 Medicines used in bipolar disorders	
carbamazepine	Tablet (scored): 100 mg; 200 mg.
lithium carbonate	Solid oral dosage form: 300 mg.
valproic acid (sodium valproate)* <i>*avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.</i>	Tablet (enteric-coated): 200 mg; 500 mg.
24.3 Medicines for anxiety disorders	
<input type="checkbox"/> diazepam Therapeutic alternatives to be reviewed (2023)	Tablet (scored): 2 mg; 5 mg.
24.4 Medicines used for obsessive compulsive disorders	
clomipramine	Capsule: 10 mg; 25 mg (hydrochloride).
24.5 Medicines for disorders due to psychoactive substance use	
bupropion	Tablet (sustained-release): 150 mg (hydrochloride)
nicotine replacement therapy (NRT)	Chewing gum: 2 mg; 4 mg (as polacrilex). Transdermal patch: 5 mg to 30 mg/16 hrs; 7 mg to 21 mg/24 hrs.
varenicline	Tablet: 0.5 mg, 1 mg
Complementary List	
<input type="checkbox"/> methadone* Therapeutic alternatives: - buprenorphine	Concentrate for oral liquid: 5 mg/mL; 10 mg/mL (hydrochloride). Oral liquid: 5 mg/5 mL; 10 mg/5 mL (hydrochloride). <i>*The medicines should only be used within an established support programme.</i>

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25. MEDICINES ACTING ON THE RESPIRATORY TRACT	
25.1 Antiasthmatic medicines and medicines for chronic obstructive pulmonary disease	
<input type="checkbox"/> budesonide Therapeutic alternatives: - beclometasone - ciclesonide - flunisolide - fluticasone - mometasone	Inhalation (aerosol): 100 micrograms per dose; 200 micrograms per dose.
<input type="checkbox"/> budesonide + <input type="checkbox"/> formoterol Therapeutic alternatives: - beclometasone + formoterol - budesonide + salmeterol - fluticasone + formoterol - fluticasone furoate + vilanterol - mometasone + formoterol	Dry powder inhaler: 100 micrograms + 6 micrograms per dose; 200 micrograms + 6 micrograms per dose
epinephrine (adrenaline)	Injection: 1 mg/mL (as hydrochloride or hydrogen tartrate) in 1 mL ampoule.
ipratropium bromide	Inhalation (aerosol): 20 micrograms/metered dose.
<input type="checkbox"/> salbutamol Therapeutic alternatives: - terbutaline	Inhalation (aerosol): 100 micrograms (as sulfate) per dose. Injection: 50 micrograms/mL (as sulfate) in 5 mL ampoule. Metered dose inhaler (aerosol): 100 micrograms (as sulfate) per dose. Respirator solution for use in nebulizers: 5 mg/mL (as sulfate).
<input type="checkbox"/> tiotropium Therapeutic alternatives: - aclidinium - glycopyrronium - umeclidinium	Powder for inhalation, capsule: 18 micrograms Inhalation solution: 1.25 micrograms; 2.5 micrograms per actuation
26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID–BASE DISTURBANCES	
26.1 Oral	
oral rehydration salts	See section 17.5.1.
potassium chloride	Powder for solution.
26.2 Parenteral	
glucose	Injectable solution: 5% (isotonic); 10% (hypertonic); 50% (hypertonic).
glucose with sodium chloride	Injectable solution: 4% glucose, 0.18% sodium chloride (equivalent to Na ⁺ 30 mmol/L, Cl ⁻ 30 mmol/L). Injectable solution: 5% glucose, 0.9% sodium chloride (equivalent to Na ⁺ 150 mmol/L and Cl ⁻ 150 mmol/L); 5% glucose, 0.45% sodium chloride (equivalent to Na ⁺ 75 mmol/L and Cl ⁻ 75 mmol/L) [c].

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potassium chloride	<p>Solution: 11.2% in 20 mL ampoule (equivalent to K⁺ 1.5 mmol/mL, Cl⁻ 1.5 mmol/mL).</p> <p>Solution for dilution: 7.5% (equivalent to K 1 mmol/mL and Cl 1 mmol/mL) [c]; 15% (equivalent to K 2 mmol/mL and Cl 2 mmol/mL) [c].</p>
sodium chloride	Injectable solution: 0.9% isotonic (equivalent to Na ⁺ 154 mmol/L, Cl ⁻ 154 mmol/L).
sodium hydrogen carbonate	<p>Injectable solution: 1.4% isotonic (equivalent to Na⁺ 167 mmol/L, HCO₃⁻ 167 mmol/L).</p> <p>Solution: 8.4% in 10 mL ampoule (equivalent to Na⁺ 1000 mmol/L, HCO₃⁻ 1000 mmol/L).</p>
sodium lactate, compound solution	Injectable solution.
26.3 Miscellaneous	
water for injection	2 mL; 5 mL; 10 mL ampoules.
27. VITAMINS AND MINERALS	
ascorbic acid	Tablet: 50 mg.
calcium	Tablet: 500 mg (elemental).
<input type="checkbox"/> colecalciferol [c] Therapeutic alternatives: - ergocalciferol	<p>Oral liquid: 400 IU/mL.</p> <p>Solid oral dosage form: 400 IU; 1000 IU.</p>
<input type="checkbox"/> ergocalciferol Therapeutic alternatives: - colecalciferol	<p>Oral liquid: 250 micrograms/mL (10 000 IU/mL).</p> <p>Solid oral dosage form: 1.25 mg (50 000 IU).</p>
iodine	<p>Capsule: 190 mg.</p> <p>Iodized oil: 1 mL (480 mg iodine); 0.5 mL (240 mg iodine) in ampoule (oral or injectable); 0.57 mL (308 mg iodine) in dispenser bottle.</p>
multiple micronutrient powder [c]	<p>Sachets containing:</p> <ul style="list-style-type: none"> - iron (elemental) 12.5 mg (as coated ferrous fumarate) - zinc (elemental) 5 mg - vitamin A 300 micrograms - with or without other micronutrients at recommended daily values
nicotinamide	Tablet: 50 mg.
pyridoxine	Tablet: 25 mg (hydrochloride).
retinol	<p>Capsule: 50 000 IU; 100 000 IU; 200 000 IU (as palmitate).</p> <p>Oral oily solution: 100 000 IU/mL (as palmitate) in multidose dispenser.</p> <p>Tablet (sugar-coated): 10 000 IU (as palmitate).</p> <p>Water-miscible injection: 100 000 IU (as palmitate) in 2 mL ampoule.</p>
riboflavin	Tablet: 5 mg.
thiamine	Tablet: 50 mg (hydrochloride).

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<i>Complementary List</i>	
<i>calcium gluconate</i>	<i>Injection: 100 mg/mL in 10 mL ampoule.</i>
28. EAR, NOSE AND THROAT MEDICINES	
acetic acid [c]	Topical: 2%, in alcohol.
<input type="checkbox"/> budesonide [c] Therapeutic alternatives to be reviewed (2023)	Nasal spray: 100 micrograms per dose.
<input type="checkbox"/> ciprofloxacin [c] Therapeutic alternatives: - ofloxacin	Solution (ear drops): 0.3% (as hydrochloride).
<input type="checkbox"/> xylometazoline <input checked="" type="checkbox"/> [c] Therapeutic alternatives to be reviewed (2023)	Nasal spray: 0.05%. <input checked="" type="checkbox"/> Not in children less than 3 months.
29. MEDICINES FOR DISEASES OF JOINTS	
29.1 Medicines used to treat gout	
allopurinol	Tablet: 100 mg.
29.2 Disease-modifying anti-rheumatic drugs (DMARDs)	
chloroquine	Tablet: 100 mg; 150 mg (as phosphate or sulfate).
<i>Complementary List</i>	
<i>azathioprine</i>	Tablet: 50 mg.
<i>hydroxychloroquine</i>	Solid oral dosage form: 200 mg (as sulfate).
<i>methotrexate</i>	Tablet: 2.5 mg (as sodium salt).
<i>penicillamine</i>	Solid oral dosage form: 250 mg.
<i>sulfasalazine</i>	Tablet: 500 mg.
29.3 Juvenile joint diseases	
<i>Complementary List</i>	
<i>acetylsalicylic acid* (acute or chronic use)</i>	Suppository: 50 mg to 150 mg. Tablet: 100 mg to 500 mg. <i>*For use for rheumatic fever, juvenile arthritis, Kawasaki disease.</i>
30. DENTAL PREPARATIONS	
fluoride	Paste, cream or gel: containing between 1000 and 1500 ppm fluoride (any type). In other appropriate topical formulations.
glass ionomer cement	Single-use capsules: 0.4 g powder + 0.09 mL liquid. Multi-use bottle: powder + liquid. Powder (fluoro-alumino-silicate glass) contains: 25-50% silicate, 20-40% aluminium oxide, 1-20% fluoride, 15-40% metal oxide, 0-15% phosphate, remainder are polyacrylic acid powder and metals in minimal quantities. Liquid (aqueous) contains: 7-25% polybasic carboxylic acid, 45-60% polyacrylic acid.
silver diamine fluoride	Solution: 38% w/v.

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Table 1.1: Medicines with age or weight restrictions

artesunate + pyronaridine tetraphosphate	> 5 kg
atropine	> 3 months
bedaquiline	≥ 5 years
benzyl benzoate	>2 years
betamethasone topical preparations	hydrocortisone preferred in neonates
cefazolin	> 1 month
ceftriaxone	> 41 weeks corrected gestational age
darunavir	> 3 years
delamanid	≥ 3 years (25 mg dispersible tablet) ≥ 6 years (50 mg tablet)
dihydroartemisinin + piperaquine phosphate	> 5 kg
diloxanide	>25 kg
dolutegravir	≥ 4 weeks and ≥ 3 kg (10 mg dispersible tablet) ≥ 25 kg (50 mg tablet)
doxycycline	> 8 years (except for serious infections e.g. cholera)
fluoxetine	> 8 years
ibuprofen	> 3 months (except IV form for patent ductus arteriosus)
mefloquine	> 5 kg or > 3 months
metoclopramide	Not in neonates
nevirapine	> 6 weeks
ondansetron	> 1 month
silver sulfadiazine	> 2 months
tetracaine	Not in preterm neonates
xylometazoline	> 3 months

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Table 1.2: Explanation of dosage forms

A. Principal dosage forms used in EML – oral administration

Term	Definition
Solid oral dosage form	<p>Refers to tablets or capsules or other solid dosage forms such as 'melts' that are immediate-release preparations. It implies that there is no difference in clinical efficacy or safety between the available dosage forms, and countries should therefore choose the form(s) to be listed depending on quality and availability.</p> <p>The term 'solid oral dosage form' is <i>never</i> intended to allow any type of modified-release tablet.</p>
Tablets	<p>Refers to:</p> <ul style="list-style-type: none"> • uncoated or coated (film-coated or sugar-coated) tablets that are intended to be swallowed whole; • unscored and scored*; • tablets that are intended to be chewed before being swallowed; • tablets that are intended to be dispersed or dissolved in water or another suitable liquid before being swallowed; • tablets that are intended to be crushed before being swallowed. <p>The term 'tablet' without qualification is <i>never</i> intended to allow any type of modified-release tablet.</p>
Tablets (qualified)	<p>Refers to a specific type of tablet:</p> <p>chewable - tablets that are intended to be chewed before being swallowed;</p> <p>dispersible - tablets that are intended to be dispersed in water or another suitable liquid before being swallowed;</p> <p>soluble - tablets that are intended to be dissolved in water or another suitable liquid before being swallowed;</p> <p>crushable - tablets that are intended to be crushed before being swallowed;</p> <p>scored - tablets bearing a break mark or marks where sub-division is intended in order to provide doses of less than one tablet;</p> <p>sublingual - tablets that are intended to be placed beneath the tongue.</p> <p>The term 'tablet' is <i>always</i> qualified with an additional term (in parentheses) in entries where one of the following types of tablet is intended: gastro-resistant (such tablets may sometimes be described as enteric-coated or as delayed-release), prolonged-release or another modified-release form.</p>

* Scored tablets may be divided for ease of swallowing, provided that dose is a whole number of tablets.

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Capsules	Refers to hard or soft capsules. The term 'capsule' without qualification is <i>never</i> intended to allow any type of modified-release capsule.
Capsules (qualified)	The term 'capsule' with qualification refers to gastro-resistant (such capsules may sometimes be described as enteric-coated or as delayed-release), prolonged-release or another modified-release form.
Granules	Preparations that are issued to patient as granules to be swallowed without further preparation, to be chewed, or to be taken in or with water or another suitable liquid. The term 'granules' without further qualification is <i>never</i> intended to allow any type of modified-release granules.
Oral powder	Preparations that are issued to patient as powder (usually as single-dose) to be taken in or with water or another suitable liquid.
Oral liquid	Liquid preparations intended to be <i>swallowed</i> i.e. oral solutions, suspensions, emulsions and oral drops, including those constituted from powders or granules, but <i>not</i> those preparations intended for <i>oromucosal administration</i> e.g. gargles and mouthwashes. Oral liquids presented as powders or granules may offer benefits in the form of better stability and lower transport costs. If more than one type of oral liquid is available on the same market (e.g. solution, suspension, granules for reconstitution), they may be interchanged and in such cases should be bioequivalent. It is preferable that oral liquids do not contain sugar and that solutions for children do not contain alcohol.

B. Principal dosage forms used in EML – parenteral administration

Term	Definition
Injection	Refers to solutions, suspensions and emulsions including those constituted from powders or concentrated solutions.
Injection (qualified)	Route of administration is indicated in parentheses where relevant.
Injection (oily)	The term 'injection' is qualified by '(oily)' in relevant entries.
Intravenous infusion	Refers to solutions and emulsions including those constituted from powders or concentrated solutions.

C. Other dosage forms

Mode of administration	Term to be used
To the eye	Eye drops, eye ointments.
Topical	For liquids: lotions, paints. For semi-solids: cream, ointment.
Rectal	Suppositories, gel or solution.
Vaginal	Pessaries or vaginal tablets.
Inhalation	Powder for inhalation, pressurized inhalation, nebulizer.

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midazolam	1, 3, 5	povidone iodine	40
mifepristone – misoprostol	50	praziquantel	6
miltefosine	21	prednisolone	4, 32, 42, 48
misoprostol	50	primaquine	22
morphine	1, 2	procaine benzylpenicillin	11
moxifloxacin	15, 16	procarbazine	29
multiple micronutrient powder	54	progesterone vaginal ring	49
multiple micronutrient supplement	50	proguanil	23
mumps vaccine	47	propofol	1
mupirocin	39	propranolol	24
naloxone	4		

WHO Model List of Essential Medicines – 22nd List (2021)

propylthiouracil	44, 45	sulfamethoxazole + trimethoprim	11, 23
<i>prostaglandin E1</i>	51	sulfasalazine	42, 55
protamine sulfate	33	sumatriptan	24
pyrantel	6	suramin sodium	23
pyrazinamide	15	<i>surfactant</i>	51
<i>pyridostigmine</i>	47	suxamethonium	47
pyridoxine	54	<i>tacrolimus</i>	25
pyrimethamine	23	<i>tamoxifen</i>	32
quinine	22	telmisartan + amlodipine	37
rabies vaccine	47	telmisartan + hydrochlorothiazide	37
raltegravir	19	tenofovir disoproxil fumarate	18, 20
ranitidine	41	terbinafine	38
<i>rasburicase</i>	32	<i>testosterone</i>	43
<i>realgar-Indigo naturalis formulation</i>	29	tetanus vaccine	46
red blood cells	34	tetracaine	48
retinol	54	tetracycline	48
ribavirin	19, 21	<i>thalidomide</i>	31
riboflavin	54	thiamine	54
rifabutin	15	tick-borne encephalitis vaccine	46
rifampicin	15	timolol	48
rifapentine	15	<i>tioguanine</i>	29
risperidone	51	tiotropium	53
ritonavir	18	tranexamic acid	34, 50
<i>rituximab</i>	30	<i>trastuzumab</i>	30
rotavirus vaccine	46	triclabendazole	6
rubella vaccine	46	trimethoprim	12
salbutamol	53	tropicamide	40
salicylic acid	39	tuberculin, purified protein derivative (PPD)	45
selenium sulfide	38	typhoid vaccine	47
senna	3, 42	ulipristal	49
silver diamine fluoride	55	urea	39
silver sulfadiazine	39	valganciclovir	19, 20
simvastatin	38	valproic acid (sodium valproate)	5, 6, 52
<i>sodium calcium edetate</i>	4	vancomycin	14
sodium chloride	54	varenicline	52
sodium hydrogen carbonate	54	varicella vaccine	47
sodium lactate	54	vecuronium	47
sodium nitrite	4	verapamil	35
<i>sodium nitroprusside</i>	37	<i>vinblastine</i>	29
sodium stibogluconate	21	<i>vincristine</i>	29
sodium thiosulfate	4, 38	<i>vinorelbine</i>	29
sofosbuvir	20	voriconazole	17
sofosbuvir + velpatasvir	20	warfarin	34
spectinomycin	11	water for injection	54
spironolactone	38, 41	whole blood	34
<i>streptokinase</i>	38	xylometazoline	55
<i>streptomycin</i>	16	yellow fever vaccine	46
<i>succimer</i>	4	zidovudine	18
sulfadiazine	23	zinc sulfate	43
sulfadoxine + pyrimethamine	22, 23	<i>zoledronic acid</i>	32

